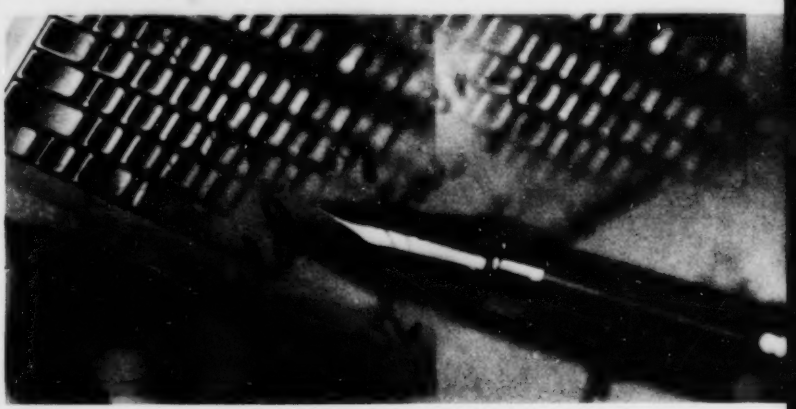
RESEARCH REPORT

SOUND AND FIRE PERFORMANCE OF FIRE STOPS IN MULTI-FAMILY DWELLINGS:

FIRE SPREAD IN WALL-FLOOR JOINTS OF MULTI-FAMILY DWELLINGS



CMHC SCHL

HOME TO CANADIANS

Canada

CMHC—HOME TO CANADIANS

Canada Mortgage and Housing Corporation (CMHC) is the Government of Canada's national housing agency. We help Canadians gain access to a wide choice of quality, affordable homes.

Our mortgage loan insurance program has helped many Canadians realize their dream of owning a home. We provide financial assistance to help Canadians most in need to gain access to safe, affordable housing. Through our research, we encourage innovation in housing design and technology, community planning, housing choice and finance. We also work in partnership with industry and other Team Canada members to sell Canadian products and expertise in foreign markets, thereby creating jobs for Canadians here at home.

We offer a wide variety of information products to consumers and the housing industry to help them make informed purchasing and business decisions. With Canada's most comprehensive selection of information about housing and homes, we are Canada's largest publisher of housing information.

In everything that we do, we are helping to improve the quality of life for Canadians in communities across this country. We are helping Canadians live in safe, secure homes. CMHC is home to Canadians.

Canadians can easily access our information through retail outlets and CMHC's regional offices.

You can also reach us by phone at 1 800 668-2642
(outside Canada call (613) 748-2003)
By fax at 1 800 245-9274
(outside Canada (613) 748-2016)

To reach us online, visit our home page at www.cmhc-schl.gc.ca

Canada Mortgage and Housing Corporation supports the Government of Canada policy on access to information for people with disabilities. If you wish to obtain this publication in alternative formats, call 1 800 668-2642.

Sound and Fire Performance of Fire Stops in Multi-Family Dwellings

Fire Spread in Wall-Floor Joints of Multi-Family Dwellings

Prepared by:

M.A. Sultan, Ph.D., Y.P. Seguin, CET, P. Leroux

Institute for Research in Construction, National Research Council

Prepared for :

Canada Mortgage and Housing Corporation
Forintek Canada Corporation
Gypsum Manufacturers of Canada
New Home Warranty Programs of Ontario, Alberta,
British Columbia and Yukon
Ontario Ministry of Housing
Owens Corning Fiberglas Incorporated
Roxul Incorporated

December 1997

CMHC Project Officer: Jacques Rousseau

ACKNOWLEDGEMENTS

The National Research Council of Canada wishes to acknowledge the technical and financial contributions of the partners in this Joint Research Project. The partners include:

Canada Mortgage and Housing Corporation
Canadian Home Builders' Association
Forintek Canada Corp.
Gypsum Manufacturers of Canada
New Home Warranty Program of Ontario, Alberta, British Columbia and Yukon
Ontario Ministry of Housing
Owens-Corning Fiberglas Canada Inc.
Roxul Inc.

FIRE SPREAD IN WALL/FLOOR JOINTS OF MULTI-FAMILY DWELLINGS

by

M.A. Sultan, Y.P. Seguin and P. Leroux

EXECUTIVE SUMMARY

This report presents the results of 3 full-scale fire tests conducted at the Institute for Research in Construction, National Research Council of Canada on double stud party wall/floor joints. The assemblies were tested in a floor furnace using the CAN/ULC-S101-M89 temperature-time relationship. This study was part of a joint research project on the fire and sound flanking at the wall/floor joints in double stud wall assemblies.

Assemblies No. 1 and No. 2 were tested with various fire stop materials: semi-rigid glass and rock fibre insulation boards, sheet steel and Oriented Strand Board (OSB) placed between the joist headers, to investigate whether these materials will prevent flame spread into the upper storey cavity between studs for 15 min. Assembly No. 3 was tested, with no fire stop material in the space between the joist headers, to investigate the effect of the width of the vertical air space (12.7 mm, 25.4 mm and 38.1 mm) between insulated double-stud frames on flame spread to the upper storey cavity between studs.

Based on the results, the following conclusions can be drawn:

1. The installation of semi-rigid glass and rock fibre insulation boards, 25.4 mm thick, between the joist headers prevented upward flame spread into the wall cavity for at least 52 min. These materials meet the 15 min requirement prescribed in Subsection 3.1.11.7.(1) of the National Building Code of Canada (NBCC) 1995 Edition.
2. The steel sheet, 0.38 mm thick, and OSB, 15.9 mm thick, placed across the joist headers prevented the upward spread of flames into the wall cavity of the upper storey for at least 52 min. These materials, which are listed as fire stops in Subsection 9.10.15.3.(1), meet the 15 min requirement prescribed in Subsection 3.1.11.7.(1) of the NBCC 1995 Edition.
3. The hot gas temperature inside the wall cavity between the wood studs did not reach the intermittent flame tip temperature (550°C) when the horizontal spacing was 12.7 mm. This suggests that the flames did not spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was 12.7 mm, irrespective of whether the cavity at the top of the wall was open or closed.
4. The hot gas temperature inside the wall cavity between the wood studs was higher than the intermittent flame tip temperature (550°C) when the horizontal spacing was 25.4 mm. This suggests that the flames spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was

25.4 mm, irrespective of whether the cavity at the top of the wall was open or closed. However, based on the hot gas temperature measurements inside the cavity, the flames did not penetrate above 0.3 m from the floor level of the upper storey when the cavity was closed and above 1.5 m from the floor level of the upper storey when the cavity was open.

5. The hot gas temperature inside the wall cavity between the wood studs was higher than the intermittent flame tip temperature (550°C) when the horizontal spacing was 38.1 mm. This suggests that the flames spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was 38.1 mm, irrespective of whether the cavity at the top of the wall was open or closed.
6. The hot gas temperature inside the wall cavity between the steel studs did not reach the intermittent flame tip temperature (550°C) when the horizontal spacing was 25.4 mm. This suggests that the flames did not spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double steel-stud frames was 25.4 mm, irrespective of whether the cavity at the top of the wall was open or closed.

PROPAGATION DU FEU DANS LES JOINTS MURS-PLANCHER DES IMMEUBLES COLLECTIFS

par

M.A. Sultan, Y.P. Séguin et P. Leroux

SOMMAIRE

Le présent rapport donne les résultats de trois essais de réaction au feu en milieu réel, menés à l'Institut de recherche en construction, Conseil national de recherches du Canada, sur des joints entre un plancher et des murs mitoyens à poteaux jumelés. Les montages ont été testés dans un poêle au moyen de la relation température-temps de la CAN/ULC-S101-M89. L'étude faisait partie d'un projet de recherche conjoint sur la transmission indirecte du bruit et la propagation du feu, aux joints murs-plancher, dans les murs à poteaux jumelés.

Les ensembles n^{os} 1 et 2 ont été testés avec divers matériaux coupe-feu : des panneaux isolants semi-rigides en fibre de verre et de pierre, des tôle d'acier et des panneaux de particules orientées (PPO) placés entre les chevêtres, afin de déterminer si ces matériaux empêcheront la propagation des flammes dans la cavité de l'étage supérieur, entre les poteaux, durant 15 minutes. L'ensemble n° 3 a été testé sans matériau coupe-feu dans l'espace entre les chevêtres, afin d'examiner l'effet de la largeur de l'espace d'air vertical (12,7 mm, 25,4 mm et 38,1 mm) entre des charpentes isolées à poteaux jumelés, sur la propagation des flammes à la cavité de l'étage supérieur entre les poteaux.

Les résultats permettent de tirer les conclusions suivantes :

1. L'installation de panneaux semi-rigides en fibre de verre et de pierre, de 25,4 mm d'épaisseur, entre les chevêtres, a empêché la propagation des flammes dans la cavité murale durant au moins 52 minutes. Ces matériaux satisfaisaient à l'exigence de 15 minutes prescrite dans le sous-alinéa 3.1.11.7.(1) du Code national du bâtiment du Canada (CNBC), édition de 1995.
2. La tôle d'acier, de 0,38 mm d'épaisseur, et le PPO, de 15,9 mm d'épaisseur, placés en travers des chevêtres, ont empêché la propagation des flammes vers le haut, dans la cavité murale de l'étage supérieur, durant au moins 52 minutes. Ces matériaux, considérés comme coupe-feu dans le sous-alinéa 9.10.15.3.(1), satisfont à l'exigence de 15 minutes prescrite dans le sous-alinéa 3.1.11.7.(1) du CNBC, édition de 1995.
3. La température des gaz chauds, dans la cavité murale entre les poteaux de bois, n'avait pas atteint la température intermittente de l'extrémité supérieure de la flamme (550 °C) lorsque l'espace horizontal était de 12,7 mm. Cela suggère que les flammes ne se répandaient pas dans la cavité murale de l'étage supérieur quand l'espace horizontal entre les armatures isolées de poteaux jumelés en bois était de 12,7 mm, et ce que la cavité au-dessus du mur soit ouverte ou fermée.

4. La température des gaz chauds, dans la cavité murale entre les poteaux de bois, était supérieure à la température intermittente de l'extrémité supérieure de la flamme (550 °C) quand l'espace horizontal était de 25,4 mm. Cela suggère que les flammes se répandaient dans la cavité murale de l'étage supérieur quand l'espace horizontal entre les armatures isolées de poteaux jumelés en bois était de 24,4 mm, et ce que la cavité au-dessus du mur soit ouverte ou fermée. Cependant, les mesures de la température des gaz chauds à l'intérieur de la cavité ont montré que les flammes ne pénétraient pas au-dessus de 0,3 m au-dessus du plancher de l'étage supérieur lorsque la cavité était fermée, ni au-dessus de 1,5 m de ce plancher quand la cavité était ouverte.
5. La température des gaz chauds, dans la cavité murale entre les poteaux de bois, était supérieure à la température intermittente de l'extrémité supérieure de la flamme (550 °C) quand l'espace horizontal était de 38,1 mm. Cela suggère que les flammes se répandaient dans la cavité murale de l'étage supérieur quand l'espace horizontal entre les armatures isolées à poteaux jumelés en bois était de 38,1 mm, et ce que la cavité au-dessus du mur soit ouverte ou fermée.
6. La température des gaz chauds, dans la cavité murale entre les poteaux d'acier, n'atteignait pas la température intermittente de l'extrémité supérieure de la flamme (550 °C) quand l'espace horizontal était de 25,4 mm. Cela suggère que les flammes ne se répandaient pas dans la cavité murale de l'étage supérieur quand l'espace horizontal entre les armatures isolées à poteaux jumelés en acier était de 25,4 mm, et ce que la cavité au-dessus du mur soit ouverte ou fermée.

TABLE OF CONTENTS

Acknowledgements i
Executive Summary ii
List of Tables v
List of Figures vi
1.0 Introduction 1
2.0 Description of Wall/Floor Assemblies 2
2.1 Dimensions 2
2.1.1 Assemblies No. 1 and No. 2 2
2.1.2 Assembly No. 3 2
2.2 Materials 2
2.2.1 Ceiling and Wall Finishes 2
2.2.2 Floor and Wall Frames 2
2.2.3 Insulation 3
2.2.4 Subfloor 3
2.3 Fabrication 3
2.3.1 Assemblies No. 1 and No. 2 3
2.3.2 Assembly No. 3 4
2.4 Instrumentation 4
3.0 Test Conditions and Procedures 4
4.0 Failure Criterion 5
5.0 Test Results 5
5.1 Assembly No. 1 5
5.2 Assembly No. 2 5
5.3 Assembly No. 3 6
6.0 Summary of Test Results 7
7.0 References 8

LIST OF TABLES

1 Assembly No. 1, Internal Furnace Thermocouple Temperatures
2 Assembly No. 1, Floor Surface Unexposed Thermocouple Temperatures
3 Assembly No. 1, Internal Floor Thermocouple Temperatures (Group A)
4 Assembly No. 1, Internal Floor Thermocouple Temperatures (Group B)
5 Assembly No. 1, Thermocouple Temperatures for Wall No. 1, North Section
6 Assembly No. 1, Thermocouple Temperatures for Wall No. 1, South Section
7 Assembly No. 1, Thermocouple Temperatures for Wall No. 2, North Section
8 Assembly No. 1, Thermocouple Temperatures for Wall No. 2, South Section
9 Assembly No. 2, Internal Furnace Thermocouple Temperatures
10 Assembly No. 2, Floor Surface Unexposed Thermocouple Temperatures
11 Assembly No. 2, Internal Floor Thermocouple Temperatures (Group A)
12 Assembly No. 2, Internal Floor Thermocouple Temperatures (Group B)
13 Assembly No. 2, Thermocouple Temperatures for Wall No. 1, North Section
14 Assembly No. 2, Thermocouple Temperatures for Wall No. 1, South Section
15 Assembly No. 2, Thermocouple Temperatures for Wall No. 2, North Section
16 Assembly No. 2, Thermocouple Temperatures for Wall No. 2, South Section
17 Assembly No. 3, Internal Furnace Pressure and Thermocouple Temperatures
18 Assembly No. 3, Thermocouple Temperatures for Wall No. 1
19 Assembly No. 3, Thermocouple Temperatures for Wall No. 2
20 Assembly No. 3, Thermocouple Temperatures for Wall No. 3
21 Assembly No. 3, Thermocouple Temperatures for Wall No. 4

LIST OF FIGURES

1. Assembly No. 1, Wood Joist Floor Layout
2. Assembly No. 1, Plywood Subfloor Arrangement
3. Assembly No. 1, Gypsum Board Base Layer Layout
4. Assembly No. 1, Gypsum Board Face Layer Layout
5. Assembly No. 2, Wood Joist Floor Layout
6. Assembly No. 2, Plywood Subfloor Arrangement
7. Assembly No. 2, Gypsum Board Base Layer Layout
8. Assembly No. 2, Gypsum Board Face Layer Layout
9. Assembly No. 1, Wall No. 1 Layout (Section A-A)
10. Assembly No. 1, Wall No. 2 Layout (Section B-B)
11. Assembly No. 2, Wall No. 1 Layout (Section E-E)
12. Assembly No. 2, Wall No. 2 Layout (Section F-F)
13. Assembly No. 3, Wood Joist Floor Layout
14. Assembly 3, Plywood Subfloor Arrangement (Base Layer)
15. Assembly No. 3, Plywood Subfloor Arrangement (Face Layer)
16. Assembly No. 3, Location of Stud Walls on Flooring System
17. Assembly No. 3, Gypsum Board Base Layer Layout
18. Assembly No. 3, Gypsum Board Face Layer Layout
19. Assembly No. 3, Walls No. 1, 2 & 3 Layout (Section I-I)
20. Assembly No. 3, Wall No. 4 Layout (Section J-J)
21. Assembly No. 1, Location of Thermocouples inside Wall No. 1
22. Assembly No. 1, Location of Thermocouples inside Wall No. 2
23. Assembly No. 2, Location of Thermocouples inside Wall No. 1
24. Assembly No. 2, Location of Thermocouples inside Wall No. 2
25. Assembly No. 3, Location of Thermocouples inside Wall No. 1
26. Assembly No. 3, Location of Thermocouples inside Wall No. 2
27. Assembly No. 3, Location of Thermocouples inside Wall No. 3
28. Assembly No. 3, Location of Thermocouples inside Wall No. 4
29. Assembly No. 1, Location of Floor Internal Thermocouples
30. Assembly No. 2, Location of Floor Internal Thermocouples
31. Assembly No. 1, Location of Floor Surface Unexposed Thermocouples
32. Assembly No. 2, Location of Floor Surface Unexposed Thermocouples
33. Full-Scale Floor Furnace
34. Assembly No. 1, Walls No. 1 & 2 Temperature Distributions
35. Assembly No. 2, Walls No. 1 & 2 Temperature Distributions
36. Assembly No. 3, Walls No. 1 & 2 Temperature Distributions
37. Assembly No. 3, Walls No. 3 & 4 Temperature Distributions

FIRE SPREAD IN WALL/FLOOR JOINTS OF MULTI-FAMILY DWELLINGS

by

M.A. Sultan, Y.P. Seguin and P. Leroux

1.0 INTRODUCTION

In recent years, a number of efforts have been made to improve the quality of residential building environments in North America to meet public demands for better acoustical isolation. The 1990 National Building Code of Canada (NBCC) [1] and various provincial building codes increased the minimum sound isolation level required between multi-family dwellings from Sound Transmission Classification (STC) 45 to STC 50. However, the joint construction details involving fire separations referenced by the code were not updated. Consequently, many party wall assemblies may not meet the STC 50 requirements. Furthermore, inappropriate construction details for fire stopping can severely compromise the sound isolation between adjacent units or may not provide adequate fire separation at wall/floor joints.

Responding to the above, a Joint Research Project involving the Institute for Research in Construction/National Research Council of Canada (IRC/NRC) and 8 industry/government partners was initiated. The primary objective of the project was to identify construction details for wall/floor joints in multi-family dwellings which prevent sound flanking and fire spread. In addition, some of the current requirements for fire stops in Part 9 of the NBCC [2] were also investigated. The results of the sound isolation study are presented in a separate report [3]. This report presents the results of the fire spread study in which three tests were carried out to investigate methods to limit fire spread through wall/floor joints. Test No. 1 investigated the use of semi-rigid glass and rock fibre insulation boards to prevent fire spread to the upper storey cavity between studs above the wall/floor joints. Test No. 2 was conducted to determine whether the two materials (0.38 mm thick sheet steel and 12.5 mm Oriented Strand Board (OSB)) currently listed in Part 9, Subsection 9.10.15.31.(a) and (d) of the NBCC [2] can prevent fire spread to the upper storey cavity between studs above the wall/floor joints. Test No. 3 investigated the impact of the width of the air gap cavity in a double-stud party wall assembly (see Subsection 9.10.15.2 (2).(a) of the NBCC [2]) on fire spread in the upper storey wall cavity between studs above the wall/floor joints.

2.0 DESCRIPTION OF WALL/FLOOR ASSEMBLIES

2.1 Dimensions

2.1.1 Assemblies No. 1 and No. 2

Floor assemblies, 4851 mm long by 3937 mm wide, were constructed for Tests No. 1 and No. 2. The details for the floor assemblies are given in Figures 1 to 4 and in Figures 5 to 8, for Assemblies No. 1 and No. 2, respectively.

Two party wall assemblies, Walls No. 1 and No. 2, 2438 mm wide by 794 mm high, were constructed for each wall/floor assembly. In Assembly No. 1, a semi-rigid glass fibre insulation board, 25.4 mm thick, was placed between the joist headers at the wall/floor joint in Wall No. 1 and a semi-rigid rock fibre insulation board, 25.4 mm thick, was placed between the joist headers in Wall No. 2. In Assembly No. 2, OSB board, 12.7 mm thick, was placed across the joist headers in Wall No. 1 and sheet steel, 0.38 mm thick, was placed across the joist headers in Wall No. 2. The details of each wall assembly are given in Figures 9 and 10 and in Figures 11 and 12, for Assemblies No. 1 and No. 2, respectively.

2.1.2 Assembly No. 3

A floor assembly, 4864 mm long by 3950 mm wide, was constructed. The details of the floor assembly are given in Figures 13 to 18.

Four party walls, Walls No. 1, No. 2, No. 3 and No. 4, 2286 mm wide by 3962 mm high, were constructed. The assemblies had various depths depending on the thickness of the air space. The dimensions of each wall are given in Figures 19 and 20.

2.2 Materials

Materials used in the wall and floor assemblies were as follows:

2.2.1 Ceiling and Wall Finishes

Type X gypsum board, 12.7 mm and 15.9 mm thick, conforming to the requirements of CAN/CSA A82.27-91 [4], was used.

2.2.2 Floor and Wall Frames

The wood joists used for the floor assemblies were nominal 2x10 (38 mm by 235 mm, SPF No. 1 and No. 2, S-Dry). The wood studs used for the party walls (Walls No. 1 to No. 3) were nominal 2x4 (38 mm by 89 mm, SPF No. 1 and No. 2, S-Dry). The steel studs used for Assembly No. 3 in Wall No. 4 were 38 mm wide by 90 mm deep by 0.46 mm thick.

2.2.3 Insulation

Glass fibre insulation batts, 89 mm thick, were used to fill one side of the party wall assemblies (Assemblies No. 1 and No. 2), both sides of the party walls in Assembly No. 3 and in the floor assembly. The insulation had a mass per unit area of 1.08 kg/m^2 and conformed to CSA A101 [5]. The semi-rigid glass fibre insulation board used in Assembly No. 1 had a density of 46.4 kg/m^3 and was supplied by Owens-Corning Canada of Willowdale, Ontario. The semi-rigid rock fibre insulation board used in Assembly No. 1 had a density of 80.9 kg/m^3 and was supplied by Roxul Inc. of Milton, Ontario.

2.2.4 Subfloor

The subfloor in these test assemblies was Canadian soft plywood (CSP) tongue and groove, 15.9 mm thick.

2.3 Fabrication

2.3.1 Assemblies No. 1 and No. 2

The structural floor frame, Assemblies No. 1 and No. 2, was constructed in a conventional manner with wood joists, 38 mm thick by 235 mm deep by 3861 mm long. The floor had two 25.4 mm wide openings as shown in Figure 1. The subfloor was attached to the wood joists with common nails (see Figure 2). Glass fibre insulation, 89 mm thick, was placed above the gypsum board in each cavity between the joists. The construction details of the floor assemblies are shown in Figures 1 to 8.

For Assembly No. 1, two double wood-stud party wall assemblies (Walls No. 1 and No. 2), 2438 mm wide by 794 mm high, were constructed on top of the floor assembly with a 25.4 mm space between the double wood-studs. Semi-rigid glass and rock fibre insulation boards, 25.4 mm thick, were placed in the spaces between the joist headers for Walls No. 1 and No. 2 as shown in Figures 9 and 10, respectively. A wired glass, 6 mm thick by 356 mm high by 1238 mm wide, was installed on one side of each wall assembly to allow observations inside the wall cavity. Gypsum board, 12.7 mm thick, was installed above the viewing port. Details of these walls are shown in Figures 9 and 10.

For Assembly No. 2, the two walls (Walls No. 1 and No. 2) were similar to those used in Assembly No. 1, except the semi-rigid insulation boards were replaced by a sheet steel, 0.38 mm thick, and OSB board, 12.7 mm thick, in the space across the joist header at the subfloor level in Walls No. 1 and No. 2, respectively. Details of these wall assemblies are shown in Figures 11 and 12.

2.3.2 Assembly No. 3

Assembly No. 3 had four wall assemblies attached to a floor assembly. Walls No. 1, No. 2 and No. 3 were constructed with wood studs while Wall No. 4 was constructed with steel studs. The air cavity widths in the double wood-stud walls were 12.7 mm, 25.4 mm and 38.1 mm and, for the double steel-stud wall, the air cavity width was 25.4 mm.

The floor assembly was constructed in a conventional manner using nominal 2x10 wood joists spaced 400 mm O.C. and finished with two layers of 12.7 mm thick Type X gypsum board. The subfloor was CSP, 15.9 thick, double deck. Construction details of the floor assembly are shown in Figures 13 to 18.

Four walls, 2438 mm wide by 3962 mm high, were attached to the floor assembly above the openings as shown in Figures 19 and 20. Walls No. 1 to No. 3 were constructed with wood studs while Wall No. 4 was constructed with steel studs. The wood and steel studs were spaced 400 mm O.C. A wired glass, 6 mm thick by 3962 mm high by 1238 mm wide, was installed on both ends of each wall to allow observations inside the wall cavity. At the top of each wall, a flap was installed. This flap could be opened or closed during the test to simulate open and closed wall top conditions. The wall assemblies had various horizontal spacing thicknesses, 12.7 mm, 25.4 mm and 38.1 mm for the wood stud assemblies and 25.4 mm for the steel stud assembly. Glass fibre insulation was placed in both sides of the double stud wall between the studs. Construction details for these wall assemblies are shown in Figures 19 and 20.

2.4 Instrumentation

Type K (20 gauge) chromel-alumel thermocouples, 0.91 mm thick, were installed in the horizontal spaces between the studs to measure temperatures at various locations. Thermocouple locations for the wall assemblies in Assemblies No. 1, No. 2 and No. 3 are shown in Figures 21 to 28. Another series of thermocouples of the same size and type were installed in the floor assembly in Assemblies No. 1 and No. 2. The locations of these thermocouples are shown in Figures 29 and 30. Nine thermocouples were installed on the unexposed floor surface in Assemblies No. 1 and No. 2. The locations of these thermocouples are shown in Figures 31 and 32.

3.0 TEST CONDITIONS AND PROCEDURES

There is no Canadian standard for testing fire stop wall/floor joint assemblies and Subsection 3.1.11.7.(1) of the NBCC [2] refers to the use of a standard fire exposure as specified by CAN/ULC-S101-M89. There was no information in either the NBCC [2] or CAN/ULC-S101-M89 [6] on the construction details and procedure for testing fire stops at the wall/floor joints. Due to the lack of this information, the partners agreed to test the assemblies by exposing the bottom of the assembly which include the two double plates to heat using the propane-fired horizontal furnace shown in Figure 33. The furnace

temperatures were measured by nine (20 gauge) shielded thermocouples in accordance with CAN/ULC-S101-M89 [6]. Assembly No. 3, was tested with the flaps on top of the wall assemblies closed for the first 15 min and opened for the remaining 15 min of the test.

4.0 FAILURE CRITERION

As previously noted, Subsection 3.1.11.7. of the 1995 Edition of the NBCC [2] requires materials that are used to separate concealed spaces into compartments to remain in place and prevent the passage of flames for not less than 15 min when subjected to the standard fire exposure defined in CAN/ULC S101-M89. Therefore, an assembly was considered to have failed the test if flames were observed in the wall cavity above the subfloor level.

5.0 TEST RESULTS

5.1 Assembly No. 1

Temperature measurements inside the test assembly were taken during the test. Details of these temperature measurements are presented in Tables 1 to 8. The temperature at the floor level did not increase above the initial temperature during the first 15 min (see Figure 34 (a) and (b), TC @ level 4) for Wall No. 1 with a semi-rigid glass fibre insulation board and Wall No. 2 with a semi-rigid rock fibre insulation board, respectively.

The conditions in the wall cavities were observed through the wired glass located in one side of the wall. No flames were observed inside the cavities for 15 min. The test was allowed to continue for 52 min and no flames were observed in the cavity. At 52 min, flames penetrated the floor deck at a location that was away from the party/floor joints and the test was terminated. Both, the semi-rigid glass and rock fibre insulation boards remained in place and prevented flames from penetrating into the wall cavities of the upper storey.

5.2 Assembly No. 2

Temperature measurements inside the test assembly were taken during the test. Details of these temperatures are presented in Tables 9 to 16. The temperatures measured at the floor level increased slightly above the initial temperature during the first 15 min (see Figure 35 (a) and (b), TC @ level 4) for Walls No. 1 and No. 2, respectively.

The conditions in the wall cavities were observed through the wired glass located in one side of the wall. No flames were observed inside the cavities for 15 min. The test was allowed to continue for 52 min and no flames were observed inside the cavity of the walls. The test was terminated when flames penetrated the floor deck at a location away

from the walls. Both the sheet steel and OSB boards remained in place and prevented flames from penetrating into the wall cavities of the upper storey.

5.3 Assembly No. 3

Within a few minutes of the start of the test, it was difficult to see through the wired glass that was installed in each end of the wall assemblies.

Temperatures in the wall cavities of the four walls are shown in Figures 36 and 37. Detailed temperature measurements are presented in Tables 17 to 21. The pressure measurements are presented in Table 17. The floor furnace pressure was slightly higher than the ambient pressure (4 Pa to 42 Pa). The flame tip appears when the temperature is approximately 550°C [7].

Temperatures measured at different levels inside the wall cavity for Wall No. 1 with wood studs and a 12.7 mm horizontal spacing are shown in Figure 36 (a). The temperature at the floor level (TC @ Level 2, in the first 15 min with the flap at the top of the wall closed) was below 300°C, indicating that there was no flame at this level. When the flap was opened, there was a slight increase in temperature to 330°C. This was caused by the upward flow of hot gases inside the wall cavity. The results suggest that in insulated double wood stud walls with a 12.7 mm horizontal space between the wood frames, flames will not spread upward through the cavities between the two rows of studs irrespective of whether the top of the cavity is open or closed.

The temperatures measured at different levels inside the wall cavity for Wall No. 2 with a 25.4 mm horizontal space between the double wood stud frames are shown in Figure 36 (b). The temperatures at the floor level (TC @ Level 2) during the first 15 min with the flap closed at the top of the wall was below 600°C indicating that there was flame at that level. However, the flame did not spread inside the cavity 0.3 m above the floor level. When the flap was opened after 15 min, there was a rapid increase in temperature to 800°C at the floor level indicating increased burning in the cavity at this level, however, there was no flame spread 1.5 m above the floor level. The results showed that in an insulated double wood stud wall with a 25.4 mm horizontal space between the wood frames, flames spread inside the cavity above the floor level irrespective of whether the top of the cavity was open or closed. However, the flames did not spread upward 1.5 mm above the floor level irrespective of whether the top of the cavity was open or closed.

The temperatures measured at different levels inside the wall cavity for Wall No. 3 with a 38.1 mm horizontal space between the double wood frames are shown in Figure 37 (a). The temperature at floor level (TC @ Level 2) reached approximately 700°C even though the flap at the top of the wall was closed. This indicates that there were flames at the floor level. When the flap was opened after 15 min, there was a rapid increase in temperature to 900°C, indicating increased burning in the cavity level. The

results showed that in an insulated double wood stud wall with a 38.1 mm horizontal space between the wood frames, the flames penetrated 2.4 m above the floor level irrespective of whether the top of the cavity was open or closed.

The temperatures measured at different levels inside the wall cavity for Wall No. 4 with a 25.4 mm horizontal space between the double steel stud frames are shown in Figure 37 (b). The temperature at the floor level (TC @ Level 2) was below 100°C during the first 15 min when the flap at the top of the wall was closed. This indicates that flames did not spread vertically up into the cavity between the two rows of studs. When the flap was opened after 15 min, the temperature in the cavity increased slightly to 200°C. The results suggest that in an insulated double steel stud wall with 25.4 mm horizontal space between the steel frames, flames will not penetrate into the cavity between the double steel studs, irrespective of whether the top of the cavity is open or closed.

6.0 SUMMARY OF TEST RESULTS

In this report, the results of 3 full-scale fire tests conducted on double stud party wall assemblies are presented. Based on the results, the following conclusions can be drawn:

1. The installation of semi-rigid glass and rock fibre insulation boards, 25.4 mm thick, between the joist headers prevented upward flame spread into the wall cavity for at least 52 min. These materials meet the 15 min requirement prescribed in Subsection 3.1.11.7.(1) of the National Building Code of Canada (NBCC) 1995 Edition*.
2. The steel sheet, 0.38 mm thick, and OSB, 15.9 mm thick, placed across the joist headers prevented the upward spread of flames into the wall cavity of the upper storey for at least 52 min. These materials, which are listed as fire stops in Subsection 9.10.15.3.(1), meet the 15 min requirement prescribed in Subsection 3.1.11.7.(1) of the NBCC 1995 Edition.
3. The hot gas temperature inside the wall cavity between the wood studs did not reach the intermittent flame tip temperature (550°C) [7] when the horizontal spacing was 12.7 mm. This suggests that the flames did not spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was 12.7 mm, irrespective of whether the cavity at the top of the wall was open or closed.
4. The hot gas temperature inside the wall cavity between the wood studs was higher than the intermittent flame tip temperature (550°C) [7] when the horizontal spacing was 25.4 mm. This suggests that the flames spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was 25.4 mm, irrespective of whether the cavity at the top of the wall was open or closed. However, based on the hot gas temperature measurements inside the cavity,

* The provision in Subsection 3.1.11.7.(1) regarding the use of CAN/ULC-S101 in testing fire stop materials is not very clear. The difficulties encountered in interpreting this provision are discussed in Section 3.0 of this report.

the flames did not penetrate above 0.3 m from the floor level of the upper storey when the cavity was closed and above 1.5 m from the floor level of the upper storey when the cavity was open.

5. The hot gas temperature inside the wall cavity between the wood studs was higher than the intermittent flame tip temperature (550°C) [7] when the horizontal spacing was 38.1 mm. This suggests that the flames spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double wood-stud frames was 38.1 mm, irrespective of whether the cavity at the top of the wall was open or closed.
6. The hot gas temperature inside the wall cavity between the steel studs did not reach the intermittent flame tip temperature (550°C) [7] when the horizontal spacing was 25.4 mm. This suggests that the flames did not spread into the wall cavity of the upper storey when the horizontal spacing between the insulated double steel-stud frames was 25.4 mm, irrespective of whether the cavity at the top of the wall was open or closed.

7.0 REFERENCES

1. National Building Code of Canada, National Research Council of Canada, Ottawa, 1990.
2. National Building Code of Canada, National Research Council of Canada, Ottawa, 1995.
3. Nightingale, T.R.T. and Halliwell, R.E., Flanking Transmission at Joints in Multi-Family Dwellings, Phase I: Transmission Via Fire Stops, Client Report No. A1042.1, Institute for Research in Construction, National Research Council of Canada, Ottawa, 1997.
4. CAN/CSA-A82.27-M91, Gypsum Board-Building Materials and Products, Canadian Standards Association, Rexdale, Ontario, 1991.
5. CSA-A101-M83, Thermal Insulation, Canadian Standards Association, Rexdale, Ontario, 1983.
6. CAN/ULC-S101-M89, Standard Methods of Fire Endurance Tests of Building Construction and Materials, Underwriters' Laboratories of Canada, Scarborough, Ontario, 1989.
7. Drysdale, D., "An Introduction to Fire Dynamics", John Wiley and Sons, p. 320, 1985.

TIME	Temperatures Measured at Internal Furnace Thermocouples (°C)									T(Fav)	CAN/ULC-S101
(min)	F1	F2	F3	F4	F5	F6	F7	F8	F9	°C	°C
0	18.0	17.9	17.8	18.0	17.5	17.0	17.6	17.1	17.5	17.6	20.0
1	43.5	51.8	42.1	49.6	37.8	22.9	44.5	41.3	39.9	41.5	170.3
2	223.6	219.0	203.5	218.6	170.4	124.5	218.8	195.1	230.9	200.3	293.4
3	289.8	282.9	289.8	294.8	253.5	248.9	294.6	285.3	302.7	282.2	393.3
4	403.4	395.2	391.4	410.0	359.1	361.6	418.9	423.6	448.2	400.9	473.6
5	485.2	471.7	478.8	498.8	453.0	469.0	498.6	511.8	517.0	486.6	537.8
6	589.3	569.2	574.7	600.7	561.0	576.2	585.0	607.2	602.2	584.5	588.6
7	591.3	575.4	586.5	606.6	578.8	580.9	579.2	609.0	590.5	588.1	628.7
8	631.6	610.7	622.5	647.0	620.5	611.9	609.8	645.7	623.9	624.2	660.1
9	663.5	637.5	651.0	678.5	653.8	632.4	637.0	675.0	655.9	653.2	684.8
10	697.0	668.6	683.7	711.3	689.8	662.7	664.9	703.1	687.3	684.7	704.2
11	724.6	696.7	711.4	738.7	721.2	691.2	687.4	725.3	709.4	711.1	719.7
12	732.2	705.3	720.9	746.0	731.7	694.1	692.5	730.7	712.6	717.7	732.3
13	742.2	716.0	732.6	756.4	743.9	703.3	699.7	737.5	720.1	727.2	742.8
14	754.6	729.4	744.4	768.2	756.8	714.9	713.3	749.6	733.9	739.8	751.9
15	763.1	739.1	753.7	777.1	766.3	724.8	722.1	758.7	743.2	749.0	759.9
16	773.0	750.3	764.1	787.4	777.3	737.3	732.2	768.4	752.2	759.5	767.3
17	780.2	757.5	771.2	793.5	784.1	743.1	740.3	776.1	760.5	766.6	775.2
18	784.7	763.0	776.8	797.9	789.5	748.6	744.2	779.7	763.7	771.2	781.0
19	794.4	772.3	785.2	806.0	798.9	758.3	754.7	788.4	773.6	780.5	787.5
20	800.1	778.3	790.4	810.3	804.3	763.5	761.0	794.3	779.3	786.1	793.8
21	806.8	785.8	797.3	816.8	811.2	771.8	767.9	800.2	785.0	792.8	799.9
22	813.2	793.0	802.9	822.1	816.7	777.7	775.8	806.7	793.6	799.4	805.7
23	816.4	796.4	806.8	825.1	820.8	782.5	778.9	809.2	796.3	802.8	811.4
24	823.2	804.1	813.6	831.4	827.6	790.1	786.5	815.8	802.8	809.7	816.7
25	829.7	810.1	819.8	837.1	833.1	795.5	795.8	823.0	811.0	816.4	821.8
26	831.5	812.8	822.8	839.5	834.9	798.7	798.4	824.2	812.3	818.6	826.5
27	834.7	816.7	827.1	844.0	838.7	803.9	801.2	827.3	814.6	822.3	831.0
28	838.3	823.6	833.4	849.6	843.3	809.6	809.7	832.0	819.3	827.9	835.2
29	845.1	831.6	839.0	856.2	849.2	815.7	818.4	840.6	830.6	835.4	839.1
30	846.7	831.6	840.3	857.4	851.5	817.5	819.8	842.9	833.8	837.1	842.9
31	848.5	831.4	842.2	859.7	855.2	820.9	818.4	844.1	835.3	838.7	846.5
32	854.6	837.0	847.5	865.3	861.5	831.2	825.7	848.7	838.1	844.7	850.1
33	858.3	839.7	854.3	869.3	865.7	833.7	832.9	853.5	843.9	849.3	853.6
34	861.6	842.0	855.8	871.5	869.1	834.8	833.8	858.4	849.3	852.0	857.1
35	863.4	843.7	856.1	873.9	871.6	837.7	832.9	860.2	850.3	853.6	860.6
36	869.4	849.5	862.0	880.0	876.9	843.4	838.1	865.3	855.7	859.2	864.2
37	874.4	854.1	866.1	882.6	881.4	847.0	844.0	870.8	862.5	863.9	867.8
38	876.2	856.5	866.9	883.9	883.7	849.1	846.1	871.9	864.9	865.7	871.4
39	877.0	858.2	869.4	886.2	885.0	852.0	848.4	872.6	864.8	867.3	874.9
40	881.8	863.2	874.8	890.5	889.8	856.5	854.0	876.5	867.9	871.9	878.3
41	887.5	869.0	879.5	894.4	895.1	860.5	860.1	881.7	873.2	877.0	881.5
42	889.4	870.6	881.5	896.0	897.2	861.6	862.7	884.1	876.7	879.1	884.4
43	889.0	871.2	883.0	896.6	897.2	862.7	862.9	883.3	875.4	879.3	887.1
44	892.4	875.2	887.8	900.5	900.7	867.4	865.5	885.3	877.4	882.7	889.7
45	897.3	880.9	892.6	905.3	904.8	871.9	871.3	890.2	883.0	887.7	892.2
46	901.8	885.2	895.5	908.2	908.1	874.8	875.9	893.0	886.1	891.2	894.8
47	895.7	886.5	894.7	908.3	908.8	876.3	877.0	893.2	887.0	891.0	897.3
48	899.9	903.6	910.4	910.4	911.0	882.6	885.3	892.1	883.3	896.7	899.9
49	908.5	913.7	930.9	913.2	914.5	891.8	895.4	895.0	884.0	904.3	902.4
50	916.1	924.3	950.6	917.1	917.7	897.6	899.0	901.3	886.1	911.3	905.0
51	921.4	929.0	960.7	920.5	918.0	898.0	905.3	906.2	883.9	915.0	907.2
52	927.7	930.4	967.3	925.7	920.6	894.9	915.2	927.9	887.5	921.0	909.4
53	931.4	937.8	957.9	919.1	941.7	893.4	907.4	943.8	884.8	923.2	911.7
54	923.8	938.4	951.0	913.0	949.2	886.3	899.0	948.6	883.9	920.6	913.9
55	918.3	930.1	938.8	908.3	947.4	879.9	889.9	942.4	885.4	914.7	916.1
56	914.1	922.2	930.8	911.7	942.4	876.6	891.5	932.4	895.4	912.1	918.2

Table 1. Assembly No. 1, Internal Furnace Thermocouple Temperatures (Contract No. A1042)

TIME	Temperatures Measured at Unexposed Floor Surface Thermocouples(°C)									SR(av)
(min)	SR-1	SR-2	SR-3	SR-4	SR-5	SR-6	SR-7	SR-8	SR-9	°C
0	17.1	17.4	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.4
1	17.3	17.5	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.4
2	17.3	17.4	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.5
3	17.2	17.4	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.4
4	17.3	17.4	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.4
5	17.3	17.4	17.2	17.5	17.3	17.6	17.7	17.5	17.7	17.4
6	17.3	17.4	17.3	17.5	17.3	17.6	17.7	17.5	17.7	17.5
7	17.3	17.4	17.3	17.5	17.3	17.6	17.7	17.5	17.7	17.5
8	17.3	17.4	17.3	17.5	17.3	17.6	17.7	17.5	17.7	17.5
9	17.4	17.5	17.3	17.5	17.3	17.6	17.7	17.5	17.7	17.5
10	17.4	17.4	17.3	17.5	17.3	17.6	17.7	17.5	17.7	17.5
11	17.5	17.4	17.3	17.5	17.3	17.6	17.7	17.5	17.8	17.5
12	17.5	17.5	17.3	17.5	17.3	17.6	17.8	17.5	17.8	17.5
13	17.7	17.5	17.3	17.6	17.4	17.6	17.9	17.5	17.9	17.6
14	18.0	17.5	17.3	17.6	17.4	17.6	18.1	17.5	18.2	17.7
15	18.4	17.5	17.4	17.7	17.4	17.6	18.7	17.5	18.7	17.9
16	19.0	17.5	17.4	17.8	17.4	17.6	19.6	17.5	19.4	18.1
17	19.7	17.6	17.4	18.0	17.5	17.7	20.9	17.5	20.4	18.5
18	20.7	17.6	17.5	18.2	17.6	17.7	22.4	17.6	21.6	19.0
19	21.6	17.7	17.5	18.4	17.7	17.7	24.2	17.6	23.0	19.5
20	22.6	17.8	17.6	18.8	17.9	17.8	25.9	17.6	24.5	20.0
21	23.6	17.9	17.7	19.2	18.1	17.8	27.7	17.7	25.9	20.6
22	24.7	18.0	17.9	19.8	18.3	18.0	29.3	17.8	27.4	21.2
23	25.8	18.1	18.0	20.3	18.6	18.1	30.9	17.9	28.8	21.8
24	27.0	18.3	18.2	21.0	19.0	18.3	32.3	18.1	30.1	22.5
25	28.2	18.4	18.4	21.7	19.4	18.7	33.6	18.4	31.4	23.1
26	29.4	18.6	18.6	22.5	19.9	19.1	34.7	18.7	32.6	23.8
27	30.5	18.8	18.8	23.4	20.4	19.7	35.7	19.1	33.8	24.4
28	31.8	19.1	19.1	24.4	20.9	20.4	36.7	19.5	35.1	25.2
29	33.0	19.3	19.4	25.4	21.5	21.3	37.7	20.1	36.4	26.0
30	34.3	19.6	19.7	26.5	22.1	22.2	38.7	20.7	37.6	26.8
31	35.7	19.9	20.0	27.6	22.7	23.3	39.7	21.5	39.0	27.7
32	37.2	20.3	20.4	28.8	23.4	24.5	40.7	22.2	40.3	28.6
33	38.9	20.6	20.8	30.0	24.0	25.8	41.7	23.2	41.7	29.6
34	40.8	21.1	21.2	31.1	24.7	27.1	42.8	24.1	43.1	30.6
35	42.7	21.5	21.7	32.2	25.3	28.4	43.8	25.2	44.4	31.7
36	44.7	22.0	22.2	33.3	26.0	29.8	44.8	26.3	45.8	32.7
37	46.9	22.6	22.7	34.5	26.7	31.1	45.8	27.4	47.2	33.8
38	49.3	23.3	23.3	35.6	27.5	32.5	46.8	28.5	48.5	35.0
39	51.6	24.0	23.9	36.8	28.2	33.8	47.8	29.7	49.9	36.1
40	53.8	24.7	24.6	37.9	29.0	35.2	48.8	30.8	51.2	37.3
41	56.1	25.6	25.4	39.0	29.8	36.5	49.7	31.9	52.5	38.5
42	58.2	26.4	26.2	40.1	30.6	37.7	50.7	33.2	53.8	39.6
43	60.0	27.3	26.9	41.2	31.5	39.0	51.6	34.4	55.1	40.7
44	61.7	28.3	27.8	42.2	32.3	40.1	52.6	35.5	56.3	41.8
45	62.9	29.2	28.7	43.2	33.2	41.2	53.4	36.5	57.5	42.8
46	64.2	30.2	29.6	44.1	34.1	42.3	54.4	37.5	58.5	43.8
47	91.8	31.1	30.4	45.1	34.9	43.3	55.3	38.5	59.5	47.7
48	98.5	32.1	31.3	45.8	35.8	44.3	56.3	39.5	60.2	49.3
49	98.3	33.0	32.1	46.6	36.6	45.3	57.3	40.5	60.8	50.0
50	98.1	34.0	33.0	47.3	37.5	46.3	58.2	41.4	61.8	50.8
51	98.4	34.9	33.7	47.9	38.3	47.2	59.1	42.3	65.2	51.8
52	98.4	35.9	34.5	48.6	39.1	48.1	59.8	43.2	70.7	53.1
53	99.2	36.8	35.3	49.3	40.2	49.0	60.4	44.0	78.4	54.7
54	100.2	37.8	36.1	50.3	74.8	49.8	60.9	44.8	91.8	60.7
55	101.6	38.8	36.8	55.5	83.5	50.6	61.3	45.6	103.9	64.1
56	102.1	39.8	37.8	87.4	100.0	51.4	61.9	46.3	132.4	73.2

Table 2. Assembly No. 1, Floor Surface Unexposed Thermocouple Temperatures (Contract No. A1042)

TIME	Temperatures Measured at Internal Floor Thermocouples (°C)									
(min)	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9	IN10
0	17.2	17.4	17.3	15.8	15.7	17.5	17.3	17.3	15.6	15.6
1	17.2	17.5	17.3	15.8	16.1	17.4	17.3	17.3	15.6	15.7
2	17.2	17.4	17.3	15.8	41.1	17.4	17.2	17.3	15.7	77.0
3	17.2	17.5	17.3	16.1	60.8	17.5	17.3	17.3	18.9	79.3
4	17.2	17.4	17.3	17.8	78.8	17.4	17.3	17.3	27.5	81.1
5	17.2	17.4	17.3	21.9	85.8	17.5	17.3	17.3	38.8	83.5
6	17.3	17.5	17.4	31.2	91.7	17.4	17.3	17.3	47.3	89.4
7	17.4	17.5	17.6	47.0	88.7	17.5	17.5	17.3	55.3	88.2
8	17.6	18.0	18.3	60.9	91.0	17.5	17.7	17.4	62.0	91.1
9	18.2	18.6	21.0	70.2	94.3	17.5	18.2	17.6	68.1	93.0
10	19.1	20.1	26.1	76.7	100.1	17.6	19.0	18.6	73.9	95.8
11	20.5	22.2	32.3	81.1	103.3	17.8	20.3	21.5	78.9	96.7
12	22.4	25.1	37.6	83.6	105.7	18.0	22.0	27.1	81.8	97.8
13	25.4	27.8	41.1	85.3	107.8	18.5	24.7	33.9	83.9	99.2
14	28.7	33.3	45.2	86.3	109.1	19.4	27.8	40.7	85.5	98.4
15	32.1	37.4	48.4	87.0	106.7	20.6	31.2	44.7	86.7	99.5
16	35.1	40.0	50.6	87.3	107.3	21.8	34.2	46.6	87.7	101.1
17	37.6	42.5	52.5	87.7	110.7	23.1	36.9	47.7	88.4	104.6
18	39.7	44.1	54.0	88.0	115.8	24.5	39.3	48.8	89.0	108.8
19	41.7	46.3	55.5	88.1	132.1	25.9	41.4	49.8	89.0	118.6
20	43.7	47.7	57.3	88.3	162.0	27.3	43.5	50.7	88.9	133.4
21	45.3	47.9	58.6	88.7	194.8	28.7	45.4	51.5	89.2	157.9
22	46.7	48.0	59.8	91.0	209.6	30.0	46.7	52.0	90.7	182.7
23	48.2	49.5	62.2	92.6	219.5	31.2	48.3	52.7	93.1	205.6
24	50.1	50.9	64.2	93.9	236.8	32.5	50.3	54.1	95.1	222.6
25	52.4	54.0	66.8	95.1	252.8	33.8	52.6	55.8	96.2	253.4
26	54.5	55.8	68.7	96.2	266.7	35.2	54.7	57.6	96.9	293.8
27	56.7	58.1	70.2	97.8	280.0	36.6	56.9	59.7	97.4	329.4
28	58.5	60.0	71.7	99.7	292.3	38.0	58.9	62.8	98.2	622.4
29	60.0	61.1	72.4	101.8	303.0	39.5	60.7	67.2	98.3	680.0
30	61.9	63.2	73.8	104.1	314.9	41.0	62.6	71.2	98.5	706.7
31	63.7	65.0	74.7	106.2	328.1	42.7	64.3	74.2	99.0	717.3
32	65.3	67.0	75.7	108.2	346.5	44.4	66.0	76.6	99.4	749.4
33	68.3	70.2	80.4	110.5	826.8	46.1	69.7	79.6	100.3	845.2
34	73.0	75.1	83.3	113.6	848.3	48.4	74.2	81.7	102.5	834.8
35	76.7	77.9	85.6	117.8	851.8	50.6	76.8	83.4	105.0	828.6
36	79.5	80.2	86.8	122.6	822.0	52.9	79.8	84.3	107.7	850.2
37	81.8	82.4	88.3	126.8	857.1	55.4	81.8	84.9	110.8	859.2
38	83.7	83.9	89.3	129.5	876.3	57.7	83.0	85.0	113.8	887.2
39	85.0	85.8	89.6	132.2	883.5	59.7	84.8	85.2	117.2	903.4
40	85.8	86.5	89.4	145.6	869.3	61.4	85.5	84.5	119.6	891.3
41	86.1	86.6	88.7	169.2	867.5	62.9	85.3	84.0	124.9	894.5
42	85.5	86.3	86.3	262.5	911.5	64.1	84.6	83.7	155.2	939.3
43	84.6	85.6	86.3	372.4	937.9	65.2	83.8	83.3	195.1	956.6
44	83.9	84.8	85.6	445.8	913.6	66.0	83.1	83.8	240.8	945.4
45	83.9	84.0	85.2	491.2	905.6	66.5	82.7	84.5	290.3	956.5
46	83.9	86.8	85.2	537.0	916.7	67.2	83.0	85.6	345.4	974.0
47	96.1	163.5	122.4	602.3	969.0	70.2	215.5	420.8	469.7	1063.0
48	469.0	758.6	732.8	807.6	945.1	607.7	660.9	732.5	706.6	1019.0
49	853.1	888.6	898.2	903.0	922.2	867.9	882.4	860.7	896.8	950.8
50	844.2	853.9	861.7	862.3	903.1	836.2	855.2	850.1	862.2	915.1
51	847.1	851.9	866.6	860.8	899.0	839.3	853.1	854.0	852.0	904.8
52	846.3	844.9	845.4	851.9	759.8	860.1	858.6	850.2	855.3	909.6
53	827.5	819.9	825.7	824.7	752.9	829.8	834.0	833.2	829.0	862.6
54	835.5	836.5	841.5	838.2	756.0	839.7	843.8	841.7	839.5	825.3
55	812.8	823.5	821.9	826.3	782.7	824.9	827.2	826.6	823.8	835.3
56	828.3	824.7	837.4	842.2	806.0	842.3	840.5	833.0	836.8	802.0

Table 3. Assembly No. 1, Internal Floor Thermocouple Temperatures (Group A) (Contract No. A1042)

TIME	Temperatures Measured at Internal Floor Thermocouples (°C)									
(min)	IN11	IN12	IN13	IN14	IN15	IN16	IN17	IN18	IN19	IN20
0	17.5	17.8	17.6	15.7	15.6	17.4	17.1	17.2	15.6	15.6
1	17.5	17.8	17.6	15.7	15.8	17.4	17.1	17.2	15.6	15.7
2	17.5	17.8	17.6	15.7	33.0	17.3	17.1	17.2	15.6	34.4
3	17.5	17.8	17.6	15.9	54.8	17.4	17.2	17.2	16.0	67.6
4	17.5	17.8	17.6	17.1	68.5	17.4	17.1	17.2	18.5	86.8
5	17.5	17.8	17.6	20.6	79.4	17.4	17.1	17.2	27.2	88.6
6	17.5	17.8	17.7	30.9	89.6	17.4	17.2	17.2	39.0	92.5
7	17.6	17.8	18.0	49.0	86.4	17.4	17.2	17.2	50.6	88.1
8	17.7	18.0	19.1	63.2	87.7	17.4	17.3	17.3	59.4	87.9
9	18.0	18.5	24.4	72.5	89.0	17.4	17.6	17.6	64.8	89.6
10	18.5	19.4	33.2	78.9	91.5	17.6	18.4	19.1	69.4	91.4
11	19.9	21.7	42.0	82.9	95.4	18.1	20.0	22.7	73.9	92.6
12	24.1	29.2	49.1	84.9	98.7	19.4	24.6	28.7	78.0	94.0
13	29.2	36.9	55.8	87.3	101.1	21.6	29.9	36.0	81.2	96.3
14	32.7	43.8	60.3	89.6	103.3	24.2	34.3	42.8	83.9	98.7
15	36.2	47.4	62.8	90.5	104.8	26.5	38.3	47.1	86.0	100.3
16	39.2	49.3	64.3	91.5	105.1	28.5	41.3	49.3	87.4	102.8
17	42.1	51.1	65.2	92.0	106.1	30.5	44.0	50.7	88.3	104.7
18	44.4	53.0	66.0	91.9	108.4	32.3	46.3	51.9	88.7	109.0
19	46.4	54.6	67.1	91.8	111.6	34.1	48.4	53.0	89.1	118.1
20	48.5	56.0	67.7	91.5	124.4	35.8	50.3	54.2	89.3	134.9
21	50.7	56.0	68.3	91.1	148.8	37.3	51.9	55.6	89.6	155.0
22	52.6	57.1	69.4	91.4	183.8	38.7	53.3	56.7	90.3	184.1
23	54.5	58.7	71.3	93.0	206.9	40.2	55.1	58.0	92.2	211.7
24	56.9	59.9	74.5	94.5	215.6	41.7	57.4	59.7	94.5	238.3
25	59.5	62.3	76.9	95.6	224.0	43.3	60.0	61.4	96.5	274.5
26	61.8	64.1	78.6	96.1	238.5	45.0	62.4	63.1	97.2	329.6
27	63.8	66.5	79.6	96.2	256.0	46.4	64.3	65.2	97.5	407.8
28	65.8	67.6	80.8	96.5	272.9	47.8	65.9	69.7	98.1	629.0
29	67.8	69.9	82.1	97.3	289.8	49.3	67.7	73.8	98.1	658.8
30	69.6	71.1	82.8	98.4	325.7	51.0	69.7	76.0	97.5	739.1
31	71.2	72.7	83.8	100.3	616.4	52.5	71.5	77.7	97.1	781.1
32	72.7	74.3	84.6	103.1	492.4	53.9	72.8	79.3	97.1	790.5
33	75.3	77.1	87.1	107.0	827.4	55.1	74.8	80.6	97.5	832.8
34	77.0	78.7	89.1	111.5	868.6	57.0	77.0	82.0	99.0	850.8
35	79.1	80.1	89.5	116.8	879.2	59.2	78.6	83.1	100.9	845.5
36	80.8	82.1	90.7	122.3	866.2	60.9	80.1	84.3	102.1	848.9
37	82.8	83.7	91.4	127.2	884.7	62.4	81.9	85.1	102.7	885.8
38	84.1	85.1	91.8	130.7	929.0	63.5	83.4	85.6	103.5	941.3
39	85.2	86.1	91.9	133.6	930.2	64.5	84.6	85.4	104.5	943.8
40	85.8	86.8	91.7	137.2	893.6	65.1	85.4	85.3	106.0	908.0
41	86.2	87.4	91.6	146.5	888.8	65.5	85.9	84.8	111.3	902.2
42	86.4	87.7	90.8	173.7	925.0	66.4	86.2	84.3	128.1	940.7
43	85.6	86.7	88.7	267.1	953.7	67.2	85.4	83.7	155.7	948.0
44	84.8	86.0	87.8	372.1	940.3	68.0	84.6	83.5	187.3	922.3
45	84.3	85.1	87.1	470.4	748.3	68.4	84.1	84.2	221.4	938.4
46	84.7	87.9	88.9	512.8	781.5	68.9	84.9	85.4	270.4	980.5
47	95.8	172.2	109.3	568.4	820.2	70.8	103.5	462.9	332.9	1017.0
48	240.5	379.6	439.2	606.6	860.2	99.8	204.6	816.7	394.2	868.5
49	362.9	542.6	553.7	643.7	832.3	99.0	336.5	847.4	456.4	826.0
50	470.6	630.8	621.8	676.0	821.6	101.5	463.1	822.0	515.7	818.1
51	588.9	680.3	650.2	703.8	822.2	115.0	568.4	857.6	573.0	814.0
52	786.8	815.9	856.7	889.3	776.5	288.5	776.2	880.4	915.6	854.8
53	794.9	803.1	798.5	813.9	746.4	756.7	793.0	818.7	819.4	804.8
54	770.3	779.9	774.3	781.5	736.1	772.5	774.9	782.2	789.9	745.6
55	766.9	775.3	764.3	769.3	777.7	767.4	772.0	765.7	776.9	766.2
56	778.7	787.5	781.2	786.8	789.2	782.5	779.6	779.8	791.2	781.1

Table 4. Assembly No. 1, Internal Floor Thermocouple Temperatures (Group B) (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)																		
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	14.9	14.6	14.5	16.7	16.8	16.8	17.4	17.4	17.3	17.4	17.5	17.5	17.4	17.4	17.1	17.3	17.4	17.4	17.3
1	15.7	24.4	25.5	16.6	16.8	16.8	17.4	17.4	17.3	17.4	17.4	17.4	17.4	17.4	17.2	17.3	17.4	17.4	17.4
2	17.0	25.3	20.3	16.6	16.9	16.8	17.4	17.4	17.3	17.5	17.5	17.5	17.4	17.4	17.1	17.3	17.3	17.4	17.4
3	26.6	41.4	39.8	16.6	16.8	16.8	17.4	17.4	17.3	17.4	17.4	17.5	17.5	17.4	17.2	17.3	17.4	17.4	17.4
4	29.3	47.6	35.4	16.6	16.9	16.8	17.4	17.4	17.3	17.5	17.5	17.5	17.4	17.5	17.2	17.3	17.3	17.4	17.4
5	64.4	103.1	84.1	16.6	16.9	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.1	17.3	17.3	17.5	17.4
6	39.9	101.9	58.8	16.6	16.9	16.8	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
7	69.5	161.3	120.3	16.6	17.0	16.8	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
8	70.8	194.8	137.6	16.6	17.0	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
9	85.4	225.1	165.1	16.6	17.1	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.4	17.5	17.2	17.3	17.3	17.4	17.4
10	104.7	257.4	192.3	16.6	17.1	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
11	122.4	288.1	212.5	16.6	17.1	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.4	17.5	17.2	17.3	17.3	17.4	17.4
12	142.7	308.6	232.8	16.6	17.2	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.3	17.4	17.4
13	160.3	333.1	252.6	16.6	17.2	16.7	17.4	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
14	174.5	354.3	271.7	16.6	17.2	16.7	17.3	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.3	17.4	17.4
15	190.2	380.7	291.1	16.6	17.3	16.7	17.3	17.4	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
16	203.2	394.3	309.5	16.6	17.4	16.7	17.3	17.5	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
17	217.9	419.2	329.9	16.6	17.6	16.8	17.4	17.5	17.3	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.3	17.4	17.4
18	232.0	442.4	349.3	16.6	18.0	16.9	17.4	17.5	17.4	17.5	17.5	17.5	17.4	17.5	17.2	17.3	17.4	17.4	17.4
19	247.1	461.5	370.5	16.7	18.8	17.0	17.4	17.5	17.4	17.4	17.5	17.5	17.5	17.5	17.2	17.3	17.3	17.4	17.4
20	263.8	488.0	392.6	16.7	20.3	17.1	17.4	17.6	17.4	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.3	17.4	17.4
21	277.6	505.1	412.5	16.7	22.4	17.4	17.4	17.7	17.5	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
22	294.6	525.5	434.0	16.8	25.3	17.6	17.4	17.8	17.6	17.5	17.5	17.6	17.5	17.5	17.2	17.3	17.4	17.4	17.4
23	311.1	538.7	450.6	16.9	27.9	17.8	17.5	17.9	17.8	17.5	17.5	17.5	17.5	17.5	17.2	17.3	17.4	17.4	17.4
24	330.7	555.2	464.7	17.0	29.4	18.1	17.5	18.1	17.9	17.5	17.5	17.6	17.5	17.6	17.2	17.3	17.3	17.4	17.4
25	352.6	574.6	479.5	17.1	31.3	18.6	17.6	18.3	18.1	17.5	17.6	17.6	17.5	17.6	17.2	17.3	17.4	17.4	17.4
26	374.6	594.7	493.4	17.3	35.0	19.0	17.7	18.6	18.3	17.5	17.6	17.6	17.5	17.7	17.2	17.3	17.4	17.4	17.4
27	401.0	611.1	507.8	17.5	38.4	19.5	17.8	19.0	18.6	17.5	17.6	17.6	17.5	17.8	17.2	17.4	17.4	17.4	17.4
28	426.7	625.2	522.4	17.7	41.6	20.2	18.0	19.5	18.9	17.5	17.6	17.7	17.5	17.8	17.2	17.3	17.4	17.4	17.4
29	454.7	646.7	541.8	18.0	44.5	21.1	18.2	20.1	19.2	17.5	17.6	17.7	17.6	17.9	17.3	17.3	17.4	17.4	17.4
30	485.3	662.9	562.1	18.5	51.0	22.1	18.5	20.9	19.5	17.5	17.7	17.7	17.6	18.1	17.3	17.3	17.4	17.5	17.5
31	514.7	683.3	578.1	19.0	56.3	23.6	18.8	22.0	20.0	17.5	17.8	17.8	17.7	18.4	17.3	17.3	17.4	17.5	17.5
32	547.4	704.2	593.4	19.7	60.4	25.7	19.2	23.6	20.3	17.5	17.8	17.8	17.7	19.0	17.3	17.4	17.4	17.5	17.5
33	573.0	715.6	607.8	20.5	62.1	28.4	19.6	25.4	20.9	17.5	17.9	17.9	17.7	20.1	17.3	17.4	17.4	17.5	17.5
34	603.0	730.3	622.6	21.5	65.5	32.2	20.1	27.9	21.5	17.6	18.0	18.0	17.9	22.0	17.4	17.3	17.4	17.5	17.5
35	625.5	735.7	633.0	22.7	67.6	36.6	20.6	29.7	21.8	17.6	18.1	18.1	17.9	24.1	17.5	17.4	17.4	17.5	17.5
36	643.7	746.9	643.0	24.0	68.8	41.2	21.2	31.9	22.5	17.6	18.2	18.2	18.0	26.3	17.5	17.4	17.4	17.5	17.5
37	665.8	760.2	656.7	25.5	71.2	46.1	21.7	34.6	23.2	17.7	18.3	18.3	18.1	28.8	17.6	17.4	17.5	17.6	17.5
38	712.4	831.8	706.0	27.4	74.1	51.5	22.1	37.7	23.8	17.7	18.4	18.4	18.2	31.9	17.6	17.4	17.4	17.5	17.5
39	830.8	936.5	884.8	29.6	76.8	56.4	22.6	40.9	24.7	17.8	18.6	18.6	18.3	35.2	17.7	17.5	17.5	17.6	17.6
40	837.2	914.5	885.0	31.9	77.7	60.2	23.6	44.1	25.5	17.8	18.7	18.7	18.4	37.6	17.8	17.4	17.5	17.6	17.6
41	851.6	913.9	876.9	34.7	79.1	64.0	24.3	48.0	26.3	17.9	18.8	18.9	18.6	39.9	17.8	17.5	17.5	17.6	17.6
42	877.9	950.7	886.2	35.8	81.4	68.3	24.8	52.6	27.5	17.9	19.0	19.1	18.7	42.1	17.9	17.5	17.6	17.7	17.7
43	891.3	940.4	893.1	39.5	83.1	71.8	25.6	56.8	28.9	18.0	19.1	19.4	19.0	44.2	17.9	17.5	17.7	17.7	17.7
44	882.2	924.7	883.0	43.0	84.0	73.8	26.5	59.3	30.4	18.1	19.3	19.6	19.1	45.6	17.9	17.6	17.7	17.8	17.8
45	879.4	916.0	881.8	46.2	85.0	76.2	27.5	62.6	32.0	18.1	19.5	19.9	19.3	47.3	17.9	17.6	17.7	17.8	17.8
46	887.1	919.2	888.9	49.8	85.8	78.4	28.3	66.6	34.5	18.3	19.7	20.3	19.5	49.1	17.9	17.7	17.8	17.9	18.0
47	904.2	942.7	903.0	53.3	87.4	81.1	29.5	70.8	37.7	18.4	19.9	20.7	19.8	51.5	18.1	17.7	17.9	17.9	18.1
48	908.5	937.8	891.6	57.5	89.3	83.1	30.5	74.2	41.3	18.5	20.2	21.3	20.0	53.3	18.1	17.7	17.9	17.9	18.2
49	895.9	935.9	904.4	61.1	89.4	84.5	31.7	76.9	45.4	18.6	20.4	21.9	20.2	55.0	18.1	17.8	17.9	18.0	18.3
50	893.4	918.2	905.2	64.3	90.3	85.4	32.8	154.8	50.9	18.7	20.7	22.7	20.5	57.1	18.2	17.8	18.0	18.1	18.4
51	839.9	877.3	867.3	86.2	587.5	155.7	219.7	738.7	64.1	18.9	21.0	23.7	20.8	59.1	18.3	17.9	18.0	18.1	18.6
52	882.3	930.3	896.2	891.2	887.5	871.1	909.9	881.3	863.8	19.0	21.4	25.0	21.1	61.6	18.3	17.9	18.0	18.1	18.6
53	906.6	903.3	897.1	908.9	875.5	900.9	914.6	904.6	896.2	19.2	21.7	26.8	21.5	63.9	18.4	17.9	18.1	18.2	18.8
54	890.1	897.8	887.2	876.2	868.5	877.3	886.0	884.0	888.8	19.4	22.1	29.2	21.9	67.6	18.4	18.0	18.0	18.2	18.8
55	875.1	871.3	867.5	860.6	848.2	854.5	857.7	865.2	857.1	19.6	22.9	35.3	22.4	71.8	18.5	18.0	18.1	18.3	19.0
56	872.3	886.2	864.6	838.6	830.4	836.5	839.0	844.2	843.4	19.9	24.4	49.9	23.2	73.4	18.5	18.1	18.1	18.6	19.0

Table 5. Assembly No. 1, Thermocouple Temperatures for Wall No. 1, North Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)																		*** denotes a faulty thermocouple
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	14.8	15.3	14.5	16.9	***	16.8	17.4	16.8	17.3	17.4	17.4	17.4	17.4	17.4	17.3	17.5	17.5	17.4	17.4
1	28.1	95.3	21.9	16.9	***	16.8	17.4	16.8	17.3	17.4	17.4	17.4	17.4	17.4	17.3	17.4	17.5	17.4	17.4
2	20.1	36.5	23.4	16.9	***	16.8	17.4	16.9	17.3	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.4
3	40.1	126.0	34.3	16.9	***	16.7	17.4	16.9	17.4	17.4	17.4	17.4	17.4	17.4	17.3	17.5	17.5	17.5	17.4
4	30.5	64.9	41.7	16.9	***	16.8	17.4	17.0	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.4
5	76.6	249.2	79.1	16.8	***	16.7	17.4	17.0	17.4	17.4	17.5	17.5	17.5	17.4	17.4	17.5	17.5	17.5	17.5
6	44.3	84.5	79.9	16.8	***	16.7	17.4	17.1	17.3	17.4	17.5	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.4
7	82.4	282.1	126.2	16.9	***	16.8	17.4	17.2	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.5
8	89.5	288.2	145.2	16.8	***	16.8	17.4	17.2	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.4	17.4
9	108.7	318.9	172.4	16.8	***	16.7	17.4	17.3	17.4	17.4	17.4	17.5	17.4	17.4	17.4	17.5	17.5	17.5	17.4
10	129.5	379.7	200.7	16.8	***	16.7	17.4	17.3	17.3	17.4	17.4	17.4	17.5	17.4	17.4	17.5	17.5	17.5	17.4
11	143.7	409.8	227.0	16.8	***	16.7	17.4	17.3	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.5	17.5
12	166.9	438.8	249.9	16.9	***	16.8	17.4	17.3	17.4	17.4	17.5	17.4	17.4	17.4	17.4	17.5	17.5	17.5	17.5
13	188.5	470.1	273.5	16.9	***	16.8	17.4	17.3	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.5	17.5
14	206.1	492.5	295.6	16.9	***	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.5	17.5	17.5	17.5
15	231.4	511.3	320.9	16.9	***	16.8	17.5	17.5	17.4	17.4	17.4	17.4	17.5	17.4	17.4	17.5	17.5	17.5	17.5
16	247.2	524.6	321.5	16.9	***	16.8	17.5	17.6	17.4	17.4	17.5	17.4	17.4	17.4	17.4	17.5	17.5	17.4	17.4
17	270.0	554.7	315.9	16.9	***	16.8	17.4	17.8	17.4	17.4	17.5	17.5	17.5	17.5	17.4	17.5	17.5	17.5	17.4
18	280.8	574.4	340.7	16.9	***	16.8	17.5	18.3	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.5	17.5	17.5	17.5
19	294.2	586.3	371.0	17.0	***	16.8	17.5	19.1	17.5	17.4	17.4	17.4	17.5	17.4	17.4	17.5	17.5	17.5	17.4
20	311.0	605.0	398.3	17.0	***	16.9	17.5	20.8	17.5	17.4	17.4	17.5	17.4	17.4	17.4	17.5	17.5	17.5	17.5
21	322.6	601.7	419.5	17.1	***	17.0	17.6	23.2	17.5	17.4	17.4	17.5	17.4	17.4	17.4	17.5	17.5	17.5	17.5
22	336.4	604.4	442.6	17.2	***	17.1	17.6	26.0	17.6	17.4	17.5	17.5	17.5	17.5	17.4	17.5	17.5	17.5	17.5
23	349.9	603.1	463.1	17.3	***	17.2	17.7	28.4	17.6	17.4	17.5	17.5	17.5	17.5	17.4	17.5	17.5	17.5	17.4
24	367.2	603.1	483.7	17.4	***	17.3	17.8	30.4	17.7	17.4	17.5	17.6	17.5	17.5	17.4	17.5	17.5	17.5	17.5
25	387.6	610.8	503.8	17.6	***	17.5	17.8	32.5	17.8	17.4	17.5	17.6	17.5	17.6	17.4	17.5	17.5	17.5	17.5
26	409.8	628.3	522.3	17.7	***	17.8	17.9	35.5	17.9	17.4	17.5	17.6	17.5	17.6	17.4	17.5	17.5	17.5	17.5
27	434.7	634.5	539.3	17.9	***	18.1	18.1	38.4	18.0	17.4	17.5	17.6	17.5	17.6	17.4	17.5	17.5	17.5	17.5
28	462.6	633.0	560.3	18.2	***	18.5	18.2	41.6	18.2	17.4	17.5	17.7	17.5	17.7	17.4	17.5	17.5	17.5	17.5
29	494.0	643.9	588.7	18.5	***	19.0	18.4	44.9	18.1	17.4	17.6	17.7	17.6	17.8	17.5	17.5	17.5	17.5	17.5
30	524.5	664.9	621.2	18.9	***	19.8	18.6	49.9	18.4	17.4	17.7	17.8	17.6	17.9	17.5	17.5	17.5	17.5	17.5
31	550.3	674.4	644.1	19.3	***	20.7	18.9	54.3	18.8	17.5	17.7	17.9	17.7	18.1	17.5	17.5	17.5	17.5	17.5
32	580.5	686.4	664.6	19.9	***	22.0	19.1	58.0	19.1	17.5	17.8	17.9	17.7	18.4	17.5	17.5	17.5	17.5	17.5
33	606.3	689.2	685.2	20.4	***	23.7	19.4	60.7	19.4	17.5	17.8	18.0	17.8	19.1	17.5	17.5	17.6	17.5	17.5
34	625.4	702.0	709.2	21.1	***	26.2	19.7	63.6	19.8	17.5	17.9	18.1	17.8	20.0	17.6	17.5	17.6	17.5	17.5
35	647.5	710.5	727.1	21.9	***	29.2	20.1	65.5	20.1	17.5	17.9	18.2	17.9	21.3	17.6	17.5	17.6	17.6	17.6
36	661.7	713.9	737.0	23.0	***	32.6	20.6	67.3	20.5	17.6	18.0	18.3	18.0	22.7	17.7	17.6	17.6	17.6	17.5
37	681.4	724.7	753.7	24.3	***	36.8	21.0	69.8	21.0	17.6	18.1	18.4	18.1	24.2	17.7	17.6	17.6	17.6	17.6
38	702.8	737.7	774.0	25.5	***	41.4	21.5	72.7	21.6	17.6	18.2	18.5	18.2	26.0	17.8	17.6	17.6	17.6	17.6
39	723.4	763.4	881.3	27.1	***	46.0	21.9	74.9	22.2	17.7	18.3	18.7	18.3	28.1	17.8	17.6	17.6	17.6	17.6
40	736.2	771.2	886.6	28.8	***	50.3	22.2	76.5	22.8	17.7	18.4	18.8	18.4	29.9	17.9	17.6	17.6	17.6	17.6
41	751.1	786.2	892.4	31.0	***	54.6	21.6	78.9	23.6	17.7	18.5	19.0	18.5	31.8	17.9	17.7	17.7	17.7	17.7
42	856.7	969.4	919.0	33.3	***	59.1	22.4	80.7	24.4	17.8	18.6	19.2	18.7	33.7	17.9	17.7	17.8	17.7	17.7
43	894.2	950.9	925.2	36.0	***	63.3	23.5	81.9	25.2	17.8	18.9	19.5	18.9	35.4	18.0	17.8	17.9	17.8	17.8
44	882.4	924.6	899.8	38.3	***	66.3	24.7	82.7	26.3	17.9	19.0	19.7	19.0	37.0	18.0	17.8	17.9	17.8	17.8
45	875.9	911.2	914.8	40.9	***	69.6	25.3	83.8	27.5	18.0	19.1	19.9	19.2	38.6	18.0	17.8	17.9	17.9	17.9
46	884.2	914.3	929.8	44.3	***	72.8	25.9	84.4	29.0	18.1	19.3	20.3	19.4	40.6	18.1	17.9	18.0	17.9	18.0
47	892.1	929.8	944.8	47.9	***	76.0	27.1	85.2	31.1	18.2	19.5	20.7	19.6	42.7	18.1	17.9	18.0	18.0	18.1
48	899.7	920.1	930.2	51.2	***	79.0	28.6	86.6	33.5	18.2	19.7	21.1	19.8	44.6	18.2	17.9	18.1	18.0	18.2
49	894.7	921.4	932.2	54.7	***	81.3	30.2	87.8	36.5	18.4	20.0	21.6	20.1	46.4	18.2	17.9	18.1	18.1	18.3
50	880.4	911.1	918.5	58.9	***	83.0	31.4	88.7	40.8	18.5	20.2	22.3	20.4	48.7	18.3	18.0	18.2	18.1	18.3
51	845.2	913.2	914.2	165.5	***	163.4	581.1	159.9	137.2	18.6	20.5	23.2	20.7	50.9	18.4	18.0	18.2	18.2	18.5
52	869.7	887.6	859.3	888.0	***	895.1	912.1	790.1	800.2	18.8	20.8	24.3	21.0	53.5	18.4	18.1	18.2	18.2	18.6
53	896.5	888.8	881.1	896.9	***	904.6	909.7	819.9	805.5	18.9	21.1	25.7	21.4	57.1	18.5	18.1	18.2	18.2	18.7
54	898.1	880.8	883.5	871.9	***	864.2	867.4	846.2	836.2	19.1	21.5	27.8	21.8	63.0	18.5	18.1	18.2	18.3	18.7
55	881.3	870.6	863.3	853.2	***	862.6	868.7	830.4	811.1	19.2	22.1	35.0	22.3	69.0	18.6	18.1	18.2	18.4	18.9
56	871.1	871.4	862.6	833.4	***	841.2	832.7	812.3	799.5	19.5	23.6	58.6	23.1	70.6	18.7	18.2	18.5	18.6	18.8

Table 6. Assembly No. 1, Thermocouple Temperatures for Wall No. 1, South Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)																		
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	14.5	14.5	14.2	16.7	16.8	16.7	17.5	17.4	17.4	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.3
1	15.3	30.7	15.0	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	17.1	17.3	17.4	17.4	17.4	17.3
2	19.0	26.2	20.4	16.7	16.8	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.3
3	26.2	45.4	29.6	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.3
4	38.7	45.9	45.4	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.3
5	60.3	86.4	64.8	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.4	17.4	17.3
6	65.0	78.6	64.6	16.7	16.8	16.7	17.5	17.4	17.4	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.3
7	90.0	119.3	85.0	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.4	17.4	17.4
8	104.3	127.9	96.7	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.3
9	119.6	145.2	110.2	16.7	16.7	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.4
10	135.8	164.6	125.2	16.7	16.8	16.7	17.4	17.4	17.4	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.4	17.4	17.3
11	154.5	174.6	139.3	16.7	16.8	16.7	17.5	17.5	17.4	17.5	17.5	17.5	17.4	16.9	17.4	17.4	17.4	17.4	17.3
12	170.2	192.5	157.0	16.7	16.9	16.7	17.5	17.5	17.4	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.3	17.4	17.3
13	184.5	208.0	184.0	16.7	17.0	16.7	17.5	17.5	17.4	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.4	17.4	17.3
14	198.0	220.8	196.7	16.8	17.1	16.7	17.4	17.5	17.4	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.3
15	212.2	235.6	210.4	16.7	17.2	16.7	17.4	17.6	17.4	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.3
16	225.0	246.8	224.1	16.8	17.4	16.7	17.5	17.8	17.5	17.5	17.5	17.5	17.4	17.1	17.4	17.3	17.4	17.4	17.3
17	237.8	258.9	238.3	16.8	17.7	16.7	17.5	17.8	17.5	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.4
18	250.3	269.5	252.3	16.8	18.0	16.8	17.5	18.0	17.5	17.5	17.5	17.5	17.4	17.0	17.4	17.4	17.4	17.4	17.3
19	264.2	281.2	265.8	16.8	18.2	16.8	17.6	18.2	17.5	17.5	17.5	17.5	17.4	17.2	17.4	17.4	17.4	17.4	17.3
20	277.9	294.6	278.4	16.8	18.3	16.8	17.6	18.5	17.5	17.5	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.3
21	290.2	306.1	289.7	16.9	18.4	16.9	17.6	18.8	17.6	17.5	17.5	17.5	17.4	17.2	17.4	17.3	17.4	17.4	17.4
22	301.4	316.7	301.3	16.9	18.7	17.0	17.7	19.1	17.6	17.5	17.5	17.5	17.4	17.2	17.4	17.4	17.4	17.4	17.5
23	311.8	327.4	312.6	17.0	19.4	17.1	17.8	19.5	17.7	17.5	17.5	17.5	17.4	17.1	17.4	17.4	17.4	17.4	17.5
24	322.4	336.1	324.4	17.1	21.7	17.2	17.9	19.9	17.8	17.5	17.5	17.5	17.4	17.3	17.4	17.4	17.4	17.4	17.6
25	332.4	344.9	336.6	17.2	25.8	17.4	18.0	20.3	18.0	17.5	17.5	17.5	17.4	17.2	17.4	17.4	17.4	17.5	17.6
26	342.4	355.3	348.2	17.3	30.1	17.6	18.2	20.8	18.1	17.5	17.5	17.6	17.4	17.2	17.4	17.4	17.4	17.5	17.7
27	352.1	366.8	358.4	17.5	34.5	17.9	18.4	21.3	18.3	17.5	17.5	17.6	17.4	17.3	17.4	17.4	17.4	17.5	17.7
28	361.8	379.1	367.2	17.7	40.7	18.2	18.6	21.8	18.5	17.5	17.6	17.6	17.5	17.2	17.4	17.4	17.4	17.5	17.7
29	372.5	394.1	376.8	17.9	46.8	18.7	18.7	22.4	18.8	17.5	17.6	17.6	17.5	17.2	17.4	17.4	17.5	17.5	17.7
30	384.6	412.1	388.0	18.2	50.4	19.2	19.0	23.0	19.1	17.6	17.6	17.6	17.5	17.1	17.4	17.4	17.4	17.5	17.7
31	398.4	429.9	402.0	18.5	52.4	19.8	19.2	23.7	19.4	17.6	17.6	17.7	17.5	17.1	17.4	17.4	17.5	17.5	17.7
32	414.4	448.2	418.7	18.8	54.4	20.5	19.5	24.7	19.8	17.6	17.6	17.7	17.5	16.6	17.4	17.4	17.4	17.5	17.8
33	432.6	464.7	435.8	19.3	56.9	21.4	19.8	25.8	20.2	17.6	17.7	17.8	17.5	16.6	17.4	17.4	17.5	17.6	17.8
34	454.2	480.0	455.2	19.9	59.7	22.3	20.2	27.1	20.7	17.6	17.7	17.8	17.5	16.8	17.5	17.4	17.5	17.6	17.8
35	477.5	495.9	475.8	20.5	61.6	23.5	20.6	28.5	21.2	17.6	17.8	17.8	17.6	16.9	17.5	17.5	17.5	17.6	17.9
36	503.1	511.7	498.6	21.3	63.1	24.9	21.1	30.0	21.7	17.7	17.8	17.9	17.6	17.0	17.6	17.5	17.5	17.6	18.0
37	528.8	536.5	523.0	22.3	65.1	26.5	21.6	31.8	22.3	17.7	17.9	18.0	17.6	17.1	17.7	17.5	17.5	17.6	18.1
38	553.8	587.7	546.9	23.4	67.3	28.3	22.2	33.7	22.9	17.7	18.0	18.0	17.6	17.2	17.8	17.5	17.5	17.6	18.1
39	576.9	658.9	572.9	24.7	68.9	30.1	22.9	35.7	23.3	17.8	18.1	18.1	17.6	17.0	17.9	17.5	17.5	17.7	18.1
40	598.9	708.0	602.9	26.1	70.0	32.2	23.6	37.8	24.1	17.8	18.1	18.2	17.7	17.1	17.9	17.5	17.5	17.7	18.2
41	620.2	751.1	631.5	27.5	71.3	34.5	24.3	40.1	24.8	17.9	18.2	18.3	17.7	17.0	17.9	17.5	17.5	17.7	18.1
42	639.7	795.0	661.4	29.2	72.9	36.9	25.0	42.5	25.5	17.9	18.4	18.4	17.7	17.0	18.0	17.6	17.6	17.8	18.2
43	655.7	818.0	697.3	30.8	74.4	39.3	25.8	44.7	26.3	18.0	18.5	18.6	17.8	17.2	18.0	17.6	17.6	17.8	18.2
44	668.9	841.9	719.2	32.5	75.3	41.9	26.6	46.9	27.1	18.1	18.7	18.7	17.8	17.1	18.0	17.6	17.6	17.9	18.2
45	675.4	882.9	768.4	34.0	75.9	44.5	27.3	49.1	27.9	18.1	18.8	18.8	17.9	17.2	18.0	17.6	17.6	17.9	18.2
46	685.9	904.7	908.9	35.8	77.7	47.3	27.9	51.7	28.7	18.2	18.9	19.0	17.9	17.2	18.0	17.7	17.6	17.9	18.2
47	707.0	914.0	901.9	37.9	79.5	50.4	28.7	54.7	29.6	18.3	19.1	19.2	18.0	17.3	18.0	17.7	17.7	18.0	18.3
48	846.7	892.6	885.6	39.9	81.3	53.5	29.4	57.4	30.5	18.4	19.3	19.4	18.0	17.2	18.0	17.7	17.7	18.0	18.3
49	898.7	885.7	874.5	42.0	82.6	56.3	30.1	60.4	31.4	18.5	19.4	19.6	18.1	17.3	18.1	17.7	17.7	18.1	18.4
50	895.6	881.7	861.6	44.7	83.6	59.2	31.3	63.6	32.3	18.6	19.6	19.9	18.2	17.3	18.1	17.7	17.7	18.1	18.5
51	892.7	879.8	858.1	46.4	84.0	62.0	31.6	66.3	33.3	18.8	19.9	20.2	18.3	17.3	18.1	17.7	17.7	18.3	18.6
52	915.9	911.9	885.5	48.2	84.5	64.8	32.2	68.5	34.3	18.9	20.1	20.4	18.3	17.1	18.1	17.7	17.8	18.4	18.7
53	886.3	893.8	886.9	49.7	85.5	67.6	32.8	70.1	35.3	19.1	20.4	20.7	18.4	17.3	18.1	17.8	17.8	18.5	18.7
54	863.6	869.3	875.0	52.2	87.4	70.2	33.4	72.6	36.4	19.2	23.7	21.1	18.5	17.3	18.1	17.8	17.8	18.5	18.8
55	845.0	840.3	850.2	54.3	88.8	72.3	34.1	76.0	38.1	19.4	35.7	21.5	18.6	17.3	18.1	17.8	17.9	18.4	18.8
56	861.6	854.2	853.2	57.8	90.6	74.9	34.9	80.7	40.2	19.6	53.2	22.0	18.7	17.1	18.2	17.9	17.9	18.2	18.9

Table 7. Assembly No. 1, Thermocouple Temperatures for Wall No. 2, North Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)																		
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	14.5	14.6	14.3	16.8	16.6	16.8	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
1	15.3	23.0	20.9	16.8	16.6	16.8	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3
2	19.1	21.6	29.7	16.8	16.6	16.8	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3
3	32.1	37.9	43.3	16.8	16.6	16.8	17.5	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
4	43.1	38.8	56.9	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
5	70.2	82.2	85.9	16.8	16.6	16.8	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
6	89.6	77.4	100.9	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
7	127.5	132.6	124.1	16.8	16.6	16.8	17.5	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
8	143.7	142.8	135.8	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
9	161.1	157.8	158.3	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
10	179.5	179.7	184.1	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
11	197.8	189.6	202.9	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
12	216.4	209.4	221.9	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3
13	233.8	229.2	238.9	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3	17.4	17.4	17.4	17.4	17.3
14	250.1	244.0	257.0	16.8	16.6	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
15	267.4	269.4	276.6	16.8	16.7	16.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3	17.4	17.4	17.3
16	279.4	282.5	293.4	16.8	16.7	16.9	17.4	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
17	290.8	301.4	311.3	16.8	16.7	16.9	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
18	302.8	322.3	328.3	16.8	16.8	16.9	17.5	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
19	316.4	343.8	345.9	16.8	16.9	16.9	17.5	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.3
20	330.1	373.1	365.9	16.8	17.0	17.0	17.5	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.3	17.4	17.4	17.4	17.4
21	342.1	392.0	378.8	16.9	17.1	17.0	17.5	17.6	17.6	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
22	355.7	408.3	398.8	16.9	17.2	17.1	17.5	17.6	17.6	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5
23	367.4	422.0	421.3	16.9	17.4	17.2	17.5	17.7	17.7	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.5
24	381.0	434.9	450.3	17.0	17.8	17.3	17.6	17.8	17.8	17.4	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.4	17.6
25	394.4	450.6	481.7	17.0	18.6	17.5	17.6	18.0	17.9	17.4	17.4	17.5	17.4	17.4	17.4	17.4	17.4	17.5	17.6
26	406.0	465.1	508.7	17.1	20.0	17.7	17.7	18.2	18.1	17.4	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.5	17.6
27	415.9	474.6	484.8	17.2	21.7	17.9	17.8	18.4	18.3	17.4	17.5	17.5	17.4	17.4	17.4	17.4	17.4	17.5	17.6
28	424.6	483.5	501.9	17.3	23.9	18.2	17.9	18.7	18.6	17.4	17.5	17.5	17.4	17.4	17.4	17.4	17.5	17.5	17.7
29	432.5	494.0	481.9	17.4	26.9	18.6	18.1	19.0	18.9	17.4	17.5	17.5	17.5	17.4	17.4	17.4	17.5	17.5	17.7
30	443.0	507.5	508.4	17.5	30.0	19.0	18.2	19.4	19.2	17.4	17.5	17.6	17.5	17.5	17.4	17.4	17.4	17.6	17.7
31	454.9	522.5	524.4	17.7	32.9	19.5	18.4	19.9	19.6	17.5	17.6	17.6	17.5	17.5	17.4	17.4	17.5	17.5	17.7
32	462.7	538.1	541.0	17.9	35.7	20.0	18.6	20.5	20.1	17.5	17.6	17.6	17.5	17.5	17.4	17.4	17.5	17.5	17.7
33	471.9	553.2	556.9	18.2	38.7	20.6	18.9	21.3	20.6	17.5	17.6	17.7	17.6	17.6	17.5	17.4	17.5	17.6	17.8
34	454.6	572.8	608.8	18.5	41.9	21.4	19.2	22.2	21.2	17.5	17.7	17.8	17.6	17.6	17.5	17.4	17.5	17.6	17.8
35	461.6	582.9	686.6	19.0	44.9	22.2	19.5	23.2	21.8	17.6	17.8	17.9	17.7	17.7	17.6	17.4	17.5	17.6	17.9
36	481.3	599.7	732.5	19.0	47.8	23.2	19.8	24.6	22.4	17.6	17.8	17.9	17.8	17.7	17.7	17.5	17.5	17.6	17.9
37	500.0	616.7	785.0	19.6	50.7	24.2	20.3	26.0	23.1	17.6	17.8	18.0	17.8	17.8	17.7	17.5	17.5	17.6	18.0
38	515.1	633.9	848.0	20.5	53.6	25.4	20.7	27.6	23.9	17.6	17.9	18.1	17.9	17.9	17.8	17.5	17.6	17.7	18.0
39	511.7	649.2	901.4	21.4	56.1	26.7	21.1	29.3	24.6	17.7	18.0	18.2	18.0	17.9	17.9	17.5	17.6	17.7	18.1
40	516.8	663.1	905.4	22.3	58.7	28.2	21.6	31.2	25.3	17.7	18.0	18.2	18.0	18.0	17.9	17.6	17.6	17.7	18.1
41	541.5	678.0	903.2	23.6	61.1	29.9	22.1	33.3	26.1	17.7	18.1	18.3	18.1	18.1	17.9	17.6	17.6	17.8	18.1
42	563.7	713.6	896.1	24.7	63.4	31.7	22.6	35.4	26.9	17.8	18.2	18.4	18.2	18.2	17.9	17.6	17.6	17.8	18.1
43	580.5	820.5	899.0	26.2	65.4	33.7	23.1	37.6	27.6	17.8	18.3	18.5	18.3	18.3	18.0	17.6	17.6	17.9	18.2
44	592.8	876.2	895.9	27.6	67.3	35.7	23.7	39.7	28.4	17.9	18.4	18.7	18.4	18.5	17.9	17.6	17.7	17.9	18.1
45	587.0	879.8	894.9	29.2	69.0	38.0	24.3	41.9	29.3	18.0	18.5	18.8	18.5	18.6	18.0	17.6	17.7	17.9	18.2
46	599.8	888.2	897.2	30.8	71.0	40.5	24.8	44.4	30.1	18.0	18.6	19.0	18.7	18.8	18.0	17.7	17.7	18.0	18.2
47	615.4	903.5	909.0	32.7	72.9	43.2	25.3	47.2	30.9	18.1	18.8	19.2	18.8	18.9	18.0	17.7	17.7	18.1	18.2
48	837.9	890.8	902.9	34.9	75.1	46.1	25.9	49.9	31.8	18.2	18.9	19.3	19.0	19.1	18.0	17.7	17.7	18.1	18.3
49	881.4	873.4	893.6	37.2	77.1	48.9	26.6	52.9	32.6	18.3	19.0	19.5	19.1	19.3	18.0	17.7	17.7	18.2	18.3
50	889.4	858.8	879.0	39.6	79.1	52.0	27.4	56.5	33.5	18.4	19.2	19.7	19.3	19.5	18.1	17.8	17.8	18.2	18.4
51	879.9	848.9	873.9	42.1	80.4	55.0	28.0	59.8	34.4	18.5	19.4	20.0	19.5	19.8	18.1	17.8	17.8	18.4	18.5
52	921.5	882.8	890.6	44.6	81.2	58.1	28.5	62.6	35.3	18.7	19.6	20.2	19.7	20.0	18.1	17.8	17.8	18.5	18.6
53	908.3	880.4	875.1	47.4	82.4	61.3	28.9	65.1	36.2	18.8	19.9	20.4	19.9	20.3	18.1	17.8	17.9	18.5	18.7
54	880.9	869.9	865.0	50.2	84.4	64.4	29.5	67.8	37.2	19.0	24.1	20.7	20.1	20.6	18.1	17.8	17.9	18.5	18.8
55	857.5	844.2	843.6	52.6	85.7	66.9	30.2	70.6	38.2	19.1	39.2	21.1	20.4	21.0	18.1	17.9	18.0	18.4	18.8
56	876.3	873.1	863.5	56.2	87.4	70.3	30.9	75.2	39.3	19.3	59.5	21.5	20.8	21.5	18.2	17.9	18.0	18.3	18.9

Table 8. Assembly No. 1, Thermocouple Temperatures for Wall No. 2, South Section (Contract No. A1042)

TIME	Temperatures Measured at Internal Furnace Thermocouples (°C)									T(Fav)	CAN/ULC-S101
(min)	F1	F2	F3	F4	F5	F6	F7	F8	F9	°C	°C
0	9.5	9.6	9.0	8.9	8.9	8.7	9.4	10.2	9.4	9.3	20.0
1	69.9	66.4	57.0	54.9	52.6	20.8	57.2	54.3	59.9	54.7	170.3
2	285.6	256.6	240.3	233.3	232.9	123.7	210.7	203.7	246.9	225.7	293.4
3	327.2	311.0	307.2	316.5	319.7	240.9	277.0	289.9	311.5	299.8	393.3
4	465.3	439.6	428.6	437.9	446.7	346.4	409.2	417.1	443.8	425.7	473.6
5	539.0	514.1	511.3	528.2	532.9	446.5	496.7	514.9	528.6	511.9	537.8
6	587.3	559.9	575.3	593.2	594.8	531.0	540.8	565.8	558.7	566.8	588.6
7	618.4	593.3	606.4	623.1	622.0	560.7	579.2	607.9	600.3	600.7	628.7
8	639.5	614.4	631.9	650.9	644.9	590.9	609.0	640.4	623.3	626.6	660.1
9	674.0	648.4	665.5	682.7	675.9	622.1	643.7	675.1	654.4	659.5	684.8
10	708.5	680.3	699.0	715.7	709.5	654.0	673.0	708.3	690.0	692.5	704.2
11	721.9	693.4	716.7	734.7	727.4	679.0	685.6	723.3	703.8	708.8	719.7
12	732.7	706.5	729.0	745.8	736.8	690.4	697.4	736.6	716.2	720.5	732.3
13	743.3	717.4	739.9	756.7	747.3	702.0	707.8	747.2	728.0	731.5	742.8
14	753.7	728.7	749.1	766.9	759.6	718.7	718.6	755.3	739.0	742.5	751.9
15	764.7	740.5	758.9	777.6	771.2	734.4	728.4	765.7	750.1	753.8	759.9
16	772.5	748.7	766.3	786.0	779.8	746.7	735.6	772.7	757.6	762.1	767.3
17	780.4	756.1	772.8	792.7	787.0	756.7	743.7	779.3	764.7	769.6	775.2
18	787.9	763.2	779.9	798.8	793.8	763.9	751.6	786.5	771.5	776.7	781.0
19	795.6	770.1	787.6	805.1	800.5	770.5	760.2	793.2	778.4	783.8	787.5
20	802.6	778.2	794.4	810.5	807.5	779.4	767.9	799.3	785.3	790.9	793.8
21	806.9	784.6	799.4	815.4	812.3	785.8	774.0	802.9	790.4	796.1	799.9
22	811.7	791.5	803.8	819.9	817.4	791.0	778.0	807.1	795.6	801.0	805.7
23	817.0	797.3	808.8	825.1	822.5	796.1	783.7	812.1	800.8	806.2	811.4
24	822.9	803.3	813.5	830.1	828.4	802.5	789.8	816.8	806.0	811.8	816.7
25	827.5	808.3	818.2	834.9	833.5	808.9	795.6	820.9	811.7	816.9	821.8
26	832.3	813.1	822.8	839.8	838.2	813.4	800.0	825.4	816.5	821.6	826.5
27	836.3	817.5	827.0	844.9	842.4	817.1	804.3	829.1	821.5	825.8	831.0
28	840.5	821.7	831.4	849.9	846.4	820.3	807.7	833.4	826.0	830.0	835.2
29	844.3	826.0	835.4	853.7	850.1	823.7	811.8	837.5	829.9	833.9	839.1
30	848.7	831.5	840.4	858.0	854.6	827.4	816.1	841.7	834.4	838.4	842.9
31	852.4	835.5	844.1	861.7	858.4	831.0	820.2	844.9	838.2	842.1	846.5
32	856.1	838.7	847.3	865.8	861.5	833.9	823.7	847.7	842.0	845.5	850.1
33	859.6	842.1	850.9	870.0	864.9	836.1	826.1	852.6	846.5	849.0	853.6
34	861.9	845.1	854.9	874.9	869.2	839.0	828.7	856.4	851.3	852.6	857.1
35	864.6	848.4	858.6	879.5	874.0	843.0	831.3	860.7	855.7	856.4	860.6
36	867.8	852.6	862.1	882.3	878.1	847.5	835.8	864.0	859.2	860.2	864.2
37	873.2	857.6	866.3	884.9	882.0	851.4	839.7	867.2	862.9	864.2	867.8
38	877.4	860.9	869.5	887.3	885.1	854.6	844.3	869.2	866.0	867.4	871.4
39	880.3	864.1	872.5	890.0	887.8	858.1	849.1	871.9	869.2	870.6	874.9
40	883.6	865.3	876.9	892.6	890.5	862.1	852.7	875.3	871.2	873.6	878.3
41	885.6	866.2	880.1	895.3	892.7	865.6	856.5	876.8	872.2	875.9	881.5
42	889.6	869.9	884.0	899.0	895.9	869.2	861.5	879.5	875.1	879.5	884.4
43	893.2	873.5	887.3	901.8	899.6	872.0	864.8	882.6	878.4	882.8	887.1
44	895.0	877.1	889.3	904.5	902.3	874.9	867.2	884.3	880.5	885.2	889.7
45	897.5	882.1	892.4	906.8	904.1	877.8	869.0	887.0	882.6	887.9	892.2
46	901.9	885.5	897.7	910.2	907.7	884.6	874.1	890.3	885.0	892.1	894.8
47	906.2	889.9	900.6	913.0	911.8	887.0	875.8	893.6	890.6	895.6	897.3
48	910.4	893.9	903.3	914.8	916.1	892.1	878.1	894.6	893.8	898.8	899.9
49	907.3	901.3	912.8	917.2	920.8	905.8	883.8	897.8	896.7	903.9	902.4
50	922.9	906.6	944.2	922.8	937.4	913.3	890.2	900.2	894.2	913.7	905.0
51	931.9	903.4	949.3	920.3	945.1	910.1	890.1	898.8	890.5	914.6	907.2
52	939.9	913.8	970.7	925.2	961.0	915.2	889.2	908.1	890.3	922.8	909.4
53	930.2	940.0	960.4	919.6	963.4	917.2	890.6	907.5	877.5	922.0	911.7
54	928.9	945.6	950.3	912.1	962.5	912.8	897.5	913.6	875.0	921.1	913.9

Table 9. Assembly No. 2, Internal Furnace Thermocouple Temperatures (Contract No. A1042)

TIME	Temperatures Measured at Unexposed Floor Surface Thermocouples(°C)									SR(av)
(min)	SR-1	SR-2	SR-3	SR-4	SR-5	SR-6	SR-7	SR-8	SR-9	°C
0	20.5	19.7	20.4	19.9	20.6	20.3	20.4	20.4	20.3	20.3
1	20.5	19.7	20.4	19.9	20.6	20.4	20.4	20.4	20.4	20.3
2	20.5	19.7	20.4	19.9	20.6	20.3	20.4	20.4	20.3	20.3
3	20.5	19.7	20.5	19.9	20.6	20.3	20.4	20.4	20.3	20.3
4	20.4	19.7	20.4	19.9	20.6	20.3	20.4	20.4	20.3	20.3
5	20.4	19.7	20.4	19.9	20.6	20.3	20.4	20.4	20.2	20.3
6	20.5	19.7	20.4	19.9	20.6	20.3	20.3	20.4	20.3	20.3
7	20.4	19.7	20.5	19.9	20.6	20.3	20.3	20.4	20.2	20.2
8	20.5	19.7	20.5	19.9	20.6	20.3	20.3	20.4	20.2	20.3
9	20.5	19.7	20.5	19.8	20.6	20.3	20.3	20.4	20.2	20.3
10	20.7	19.7	20.5	19.8	20.9	20.3	20.3	20.4	20.3	20.3
11	21.2	19.7	20.7	19.9	21.4	20.4	20.3	20.4	20.2	20.5
12	21.9	19.7	21.1	19.8	22.3	20.5	20.4	20.5	20.2	20.7
13	22.9	19.8	21.9	19.9	23.7	20.8	20.5	20.6	20.3	21.2
14	24.2	20.0	23.1	20.0	25.4	21.3	20.7	20.8	20.3	21.8
15	25.6	20.4	24.4	20.1	27.2	21.8	21.1	21.1	20.3	22.4
16	26.9	20.8	25.9	20.3	29.0	22.5	21.5	21.4	20.4	23.2
17	28.3	21.4	27.3	20.6	30.8	23.2	22.1	21.9	20.4	24.0
18	29.6	22.2	28.7	21.0	32.3	24.0	22.6	22.5	20.4	24.8
19	30.8	23.0	30.0	21.6	33.8	24.8	23.3	23.2	20.5	25.7
20	32.0	24.0	31.1	22.3	35.2	25.5	23.9	23.8	20.6	26.5
21	33.0	25.1	32.3	23.1	36.5	26.4	24.6	24.5	20.8	27.4
22	34.0	26.3	33.6	24.1	37.8	27.3	25.4	25.3	20.9	28.3
23	35.0	27.6	34.9	25.2	39.2	28.1	26.1	26.1	21.3	29.3
24	36.0	29.0	36.3	26.4	40.5	28.9	26.9	27.0	21.5	30.3
25	37.0	30.4	37.8	27.7	41.7	29.8	27.7	27.9	21.8	31.3
26	38.1	32.0	39.3	29.0	43.1	30.7	28.6	28.8	22.2	32.4
27	39.1	33.5	40.8	30.5	44.4	31.6	29.4	29.8	22.6	33.5
28	40.2	35.1	42.3	31.9	45.7	32.5	30.3	30.8	23.0	34.6
29	41.2	36.6	43.9	33.4	47.0	33.4	31.2	31.8	23.6	35.8
30	42.3	38.2	45.4	34.9	48.3	34.4	32.1	32.8	24.2	37.0
31	43.5	39.7	47.0	36.4	49.6	35.4	33.0	33.9	24.8	38.1
32	44.7	41.2	48.6	37.8	51.0	36.4	34.0	35.1	25.4	39.3
33	46.0	42.6	50.1	39.2	52.3	37.4	34.9	36.2	26.2	40.6
34	47.2	44.0	51.6	40.6	53.5	38.5	36.0	37.4	27.0	41.8
35	48.4	45.4	53.1	42.0	54.8	39.5	37.0	38.7	27.7	43.0
36	49.7	46.6	54.5	43.4	55.9	40.6	38.0	39.9	28.6	44.1
37	50.9	47.9	55.9	44.6	57.0	41.6	39.1	41.0	29.5	45.3
38	52.0	49.1	57.2	45.9	58.0	42.7	40.0	42.2	30.5	46.4
39	53.2	50.2	58.3	47.1	58.9	43.6	41.0	43.4	31.4	47.4
40	54.2	51.3	59.4	48.2	59.7	44.5	41.8	44.5	32.2	48.4
41	55.2	52.3	60.3	49.3	60.4	45.4	42.7	45.5	33.3	49.4
42	55.9	53.2	61.1	50.3	60.9	46.1	43.5	46.4	34.1	50.2
43	56.7	54.1	61.8	51.4	61.3	46.9	44.1	47.3	35.2	51.0
44	57.3	55.0	62.4	52.3	61.6	47.5	44.8	48.2	36.0	51.7
45	58.0	55.8	62.8	53.2	61.8	48.0	45.3	48.9	36.9	52.3
46	58.6	56.5	63.1	54.0	62.0	48.5	45.9	49.5	37.6	52.8
47	59.1	57.1	63.3	54.7	62.1	49.0	46.4	50.1	38.3	53.4
48	59.7	57.8	63.5	55.5	62.2	49.5	46.9	50.6	39.1	53.9
49	64.4	58.4	63.7	56.1	62.2	50.0	47.4	51.0	39.5	54.7
50	97.5	59.0	63.8	56.7	62.3	50.5	47.9	51.4	40.1	58.8
51	98.1	59.5	64.0	57.3	62.4	50.9	48.4	51.8	40.7	59.2
52	98.6	60.1	64.2	57.9	62.6	51.4	48.9	52.3	41.1	59.7
53	98.9	60.6	64.4	58.5	62.8	51.9	49.4	52.7	41.6	60.1
54	100.4	61.0	64.6	59.0	63.1	52.5	50.2	53.1	42.0	60.7

Table 10. Assembly No. 2, Floor Surface Unexposed Thermocouple Temperatures Contract No. A1042)

TIME	Temperatures Measured at Internal Floor Thermocouples (C)								*** denotes a faulty thermocouple	
(min)	IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9	IN10
0	19.3	20.6	19.9	10.4	9.0	20.2	19.9	19.7	***	***
1	19.3	20.5	19.8	10.4	16.5	20.3	19.8	19.7	***	***
2	19.3	20.5	19.8	10.6	51.8	20.3	19.8	19.7	***	***
3	19.3	20.5	19.8	12.8	63.9	20.4	19.8	19.7	***	***
4	19.3	20.5	19.8	18.7	82.2	20.5	19.8	19.7	***	***
5	19.3	20.5	19.9	31.0	99.1	21.1	19.8	20.1	***	***
6	19.4	20.7	20.0	48.6	87.4	21.9	20.0	20.9	***	***
7	20.1	26.4	22.2	64.3	95.1	21.5	20.8	22.0	***	***
8	22.2	36.7	31.3	72.9	105.5	22.2	26.1	23.3	***	***
9	28.0	49.2	44.7	78.6	113.8	23.4	35.5	25.3	***	***
10	36.8	60.4	55.5	82.4	128.0	24.9	46.5	28.9	***	***
11	46.3	67.9	63.3	84.9	131.5	26.3	56.2	33.5	***	***
12	53.5	71.4	68.5	86.3	134.2	28.3	62.5	38.1	***	***
13	57.8	72.9	71.2	87.2	198.1	30.5	65.6	41.7	***	***
14	59.7	71.9	72.4	88.3	280.9	33.3	66.7	43.7	***	***
15	60.5	70.3	73.1	89.9	370.9	37.1	66.6	44.9	***	***
16	61.0	68.9	73.9	91.9	445.3	39.5	66.1	46.0	***	***
17	61.4	67.7	74.5	93.7	477.4	41.6	65.6	47.7	***	***
18	62.3	68.0	75.5	94.6	536.7	43.8	66.0	50.2	***	***
19	63.5	69.1	76.4	95.0	579.9	46.1	66.9	52.7	***	***
20	65.0	69.2	77.8	95.6	615.5	49.1	68.2	56.0	***	***
21	66.4	70.0	78.7	96.4	639.9	52.1	69.3	59.1	***	***
22	68.0	70.8	79.6	98.6	674.7	55.2	70.7	62.1	***	***
23	69.6	72.5	80.6	101.0	707.7	58.2	72.1	65.0	***	***
24	71.2	73.4	81.8	103.7	725.3	60.7	73.4	67.7	***	***
25	72.9	75.3	82.4	107.4	752.5	63.5	75.0	70.1	***	***
26	74.5	76.7	84.2	110.8	757.3	66.3	76.5	72.5	***	***
27	76.4	78.2	85.4	113.3	764.1	69.0	78.3	75.2	***	***
28	78.4	80.3	86.3	115.3	773.8	71.9	79.9	77.2	***	***
29	80.0	81.7	87.8	116.7	789.4	74.5	81.5	79.3	***	***
30	81.8	82.9	88.7	117.8	792.0	76.5	83.0	81.1	***	***
31	83.2	84.4	89.0	118.6	801.3	78.3	84.2	82.8	***	***
32	84.3	85.4	89.2	119.3	799.6	79.9	85.2	84.0	***	***
33	85.5	85.9	89.7	120.5	807.2	81.0	85.8	84.9	***	***
34	86.7	87.1	90.0	123.5	817.6	82.0	86.8	86.2	***	***
35	87.7	87.6	90.3	131.6	820.5	82.7	87.5	86.4	***	***
36	87.6	87.8	90.0	144.3	818.7	83.0	87.6	86.4	***	***
37	86.9	87.1	87.9	213.2	821.1	82.9	86.9	85.4	***	***
38	85.7	85.9	85.4	333.4	827.8	82.3	85.5	85.9	***	***
39	84.9	85.0	84.3	440.3	833.3	81.8	85.0	85.5	***	***
40	84.0	84.3	83.6	501.9	838.3	81.1	84.2	84.4	***	***
41	83.5	83.8	85.4	551.5	840.9	80.8	83.9	83.3	***	***
42	83.5	84.3	89.5	592.0	841.0	80.5	84.4	83.9	***	***
43	84.1	84.9	96.7	623.6	841.9	80.4	84.7	83.9	***	***
44	84.7	85.3	111.4	647.0	846.5	80.4	85.3	84.1	***	***
45	85.4	86.1	127.0	663.7	846.0	80.6	85.8	84.7	***	***
46	86.0	87.1	135.8	675.3	849.2	81.0	86.8	85.2	***	***
47	86.7	88.3	144.3	687.2	883.1	81.4	87.5	86.0	***	***
48	87.5	90.5	145.8	699.5	932.1	82.8	88.4	87.8	***	***
49	89.4	125.6	175.6	705.3	954.6	862.3	95.6	773.9	***	***
50	873.6	879.2	858.5	859.6	929.9	838.1	842.2	821.8	***	***
51	853.5	865.0	848.3	849.5	914.4	864.4	840.7	869.5	***	***
52	800.0	808.7	796.4	800.9	863.7	802.9	803.3	810.3	***	***
53	804.7	824.4	808.0	809.7	851.8	828.5	815.2	832.9	***	***
54	803.6	819.1	806.6	806.0	847.7	817.2	804.4	823.2	***	***

Table 11. Assembly No. 2, Internal Floor Thermocouple Temperatures (Group A) (Contract No. A1042)

TIME	Temperatures Measured at Internal Floor Thermocouples (C)									
(min)	IN11	IN12	IN13	IN14	IN15	IN16	IN17	IN18	IN19	IN20
0	19.7	20.8	19.7	9.8	8.7	20.9	19.5	19.3	9.3	51.8
1	19.7	20.7	19.7	9.8	13.4	20.9	19.5	19.3	9.3	185.0
2	19.7	20.7	19.8	10.0	49.3	20.9	19.5	19.3	9.6	117.8
3	19.7	20.7	19.8	12.1	61.1	20.9	19.5	19.2	12.9	201.6
4	19.7	20.7	19.8	17.4	77.0	20.9	19.5	19.2	20.1	193.4
5	19.7	20.8	19.9	26.6	85.6	21.0	19.6	19.4	32.0	298.6
6	20.1	23.6	20.5	40.2	87.6	21.1	20.0	20.0	45.8	277.3
7	21.4	34.2	23.4	59.7	94.4	21.3	21.4	20.6	58.4	323.7
8	25.2	46.4	30.9	76.2	102.3	21.7	25.9	21.6	67.4	382.5
9	32.7	57.8	48.0	85.3	108.8	22.1	34.5	23.0	74.2	417.3
10	42.9	66.0	62.1	89.4	119.2	22.7	45.2	24.9	79.0	444.5
11	53.0	72.7	70.5	91.2	125.8	23.5	55.3	27.4	82.5	482.9
12	60.2	75.6	74.9	91.4	140.0	24.5	62.3	31.1	84.8	492.1
13	64.0	75.6	76.6	91.1	188.5	25.8	65.9	32.7	86.4	502.6
14	65.6	74.8	76.8	90.7	279.1	27.3	67.2	35.2	87.4	524.5
15	65.9	73.4	76.7	90.9	367.8	29.0	67.4	37.3	88.6	526.5
16	66.2	71.8	76.8	91.6	435.2	30.7	67.2	39.2	89.6	546.8
17	67.0	71.2	77.7	93.6	499.3	32.3	67.7	41.0	90.3	550.7
18	68.2	72.2	79.4	94.8	544.9	33.8	68.8	43.9	92.8	550.1
19	69.4	72.8	80.7	95.2	595.5	35.4	70.1	47.4	95.1	553.3
20	70.8	73.1	82.1	95.9	625.6	37.2	71.4	50.7	95.6	558.4
21	72.4	74.3	83.4	97.2	652.1	39.2	72.8	54.0	96.0	572.1
22	74.0	75.8	84.4	99.3	678.2	41.2	74.0	57.8	96.6	566.0
23	75.3	76.6	84.9	102.6	706.5	43.2	75.5	60.8	96.6	580.0
24	76.6	78.0	85.5	105.8	723.7	45.4	76.6	64.3	97.0	577.3
25	77.8	79.3	86.3	109.6	744.2	47.5	77.9	68.1	97.1	585.3
26	79.0	80.8	87.4	112.8	750.2	49.7	79.1	72.2	97.1	599.6
27	80.4	81.5	88.1	115.3	762.3	51.9	80.4	76.0	97.1	607.5
28	81.8	82.7	89.1	117.4	768.4	54.2	81.8	79.5	97.2	622.3
29	83.0	84.5	90.0	118.8	779.0	56.5	83.1	82.2	97.0	622.3
30	84.0	85.5	90.3	119.6	793.8	58.7	84.2	83.9	96.7	629.6
31	85.1	86.1	90.3	120.5	804.3	60.5	85.1	85.6	96.2	644.2
32	86.2	87.8	91.3	123.1	803.4	62.2	86.6	87.3	96.6	655.9
33	87.3	88.3	91.7	130.1	806.8	63.8	87.6	88.1	98.7	673.5
34	87.9	88.7	91.4	141.3	817.0	65.3	87.9	87.7	102.7	687.0
35	87.5	88.0	90.1	198.0	814.8	66.5	87.6	86.1	106.1	691.8
36	86.9	87.2	86.7	318.3	817.6	67.4	86.8	85.4	106.6	698.6
37	85.8	85.9	85.2	433.4	819.4	68.0	85.8	84.7	143.9	702.2
38	84.5	84.9	82.6	503.9	822.3	68.4	84.8	84.4	189.7	713.5
39	83.7	84.1	82.9	555.3	827.7	68.7	85.2	84.6	236.1	739.5
40	83.4	84.1	83.9	596.8	830.7	68.9	84.7	84.9	287.2	765.2
41	83.6	84.7	84.4	628.9	833.3	69.2	84.8	85.3	335.9	762.0
42	84.0	85.0	86.1	651.4	832.8	69.5	85.3	85.7	380.5	765.4
43	84.6	85.5	88.0	664.9	834.9	69.9	85.5	85.5	418.6	771.5
44	85.1	85.9	92.7	674.0	838.8	70.2	85.9	85.6	460.7	790.9
45	85.6	86.6	110.5	702.4	842.0	70.6	86.3	85.9	499.7	854.2
46	86.5	87.4	150.1	776.2	845.6	71.0	86.8	86.2	531.5	811.1
47	87.7	89.0	179.0	836.2	930.6	71.5	87.9	86.7	559.5	795.1
48	89.5	92.2	205.6	965.7	1055.0	72.0	89.5	87.6	591.2	789.9
49	188.0	255.9	594.8	898.4	1074.0	328.1	260.2	741.4	874.7	807.7
50	795.5	805.4	826.6	816.5	995.2	720.3	791.0	833.8	837.6	786.8
51	836.5	823.5	830.2	825.4	920.2	838.1	831.9	866.1	861.1	808.9
52	795.5	784.7	789.4	785.8	869.8	793.0	804.1	808.6	802.4	810.1
53	802.3	791.6	797.2	795.4	850.0	823.8	820.5	838.5	824.7	842.9
54	807.4	797.6	801.9	805.4	844.4	810.1	812.3	824.7	814.9	790.0

Table 12. Assembly No. 2, Internal Floor Thermocouple Temperatures (Group B) (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)													*** denotes a faulty thermocouple
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	38.9	***	32.5	17.5	20.0	21.9	20.6	20.3	22.0	20.8	21.0	21.1	21.0	21.0
1	152.3	***	165.7	81.5	96.1	106.9	68.6	67.7	96.3	20.8	21.0	21.1	21.0	21.0
2	115.5	***	137.5	71.6	75.8	84.2	65.8	68.0	78.6	20.8	21.0	21.1	21.0	21.0
3	183.3	***	191.1	97.6	104.0	112.4	75.9	71.5	101.4	21.0	21.2	21.4	21.2	21.3
4	186.5	***	259.9	110.7	115.3	156.6	95.0	90.9	133.7	21.3	21.3	21.7	21.5	21.5
5	265.7	***	309.8	135.7	160.5	166.3	113.9	117.7	148.6	21.6	21.6	22.0	21.6	22.0
6	242.8	***	273.9	132.6	137.9	165.3	111.8	109.9	145.6	22.1	21.8	22.2	22.1	22.4
7	297.9	***	376.9	154.1	169.9	207.9	136.3	130.2	171.0	22.4	22.5	22.8	22.5	23.3
8	328.4	***	418.6	171.2	190.1	223.6	141.5	142.3	185.4	23.0	23.0	23.3	23.0	24.0
9	358.0	***	458.9	171.4	202.5	244.5	142.4	147.4	204.9	23.6	23.2	24.3	23.6	24.8
10	381.9	***	489.3	177.5	212.9	252.5	149.5	157.8	204.3	24.2	23.6	25.0	24.2	25.7
11	404.4	***	513.4	183.2	237.9	265.5	154.7	169.5	217.6	25.1	24.4	25.6	25.0	26.7
12	415.7	***	520.9	190.3	237.6	298.1	159.8	175.1	233.8	25.8	25.1	26.4	25.7	27.4
13	433.3	***	554.4	204.3	251.5	314.1	164.3	182.7	247.0	26.5	25.9	26.8	26.4	28.5
14	450.0	***	543.6	215.2	258.0	319.3	171.2	189.6	251.3	27.2	26.5	27.9	26.8	29.3
15	454.3	***	557.0	224.0	258.9	340.6	179.0	194.4	267.3	27.9	27.2	28.7	27.7	30.7
16	472.5	***	537.3	226.4	258.0	349.4	177.3	195.2	275.4	28.4	28.0	29.3	28.4	31.6
17	468.9	***	547.0	231.8	271.6	352.2	183.0	202.8	280.1	28.9	28.7	30.0	29.1	32.9
18	469.6	***	532.9	238.6	270.0	359.0	186.5	205.5	287.4	29.9	29.6	30.7	30.0	33.8
19	496.7	***	526.0	244.4	277.7	342.1	190.6	213.0	281.9	30.9	30.2	31.4	30.8	34.9
20	506.4	***	570.9	247.0	279.2	369.8	190.2	217.4	299.8	32.0	31.0	32.0	31.7	36.0
21	519.4	***	581.7	248.2	277.9	365.9	191.8	218.4	304.4	32.8	31.6	32.5	32.1	37.3
22	544.6	***	571.7	249.6	280.4	347.7	192.9	223.9	298.4	33.8	32.2	33.3	33.0	38.2
23	569.4	***	584.4	255.1	284.6	363.2	194.5	224.4	305.5	34.2	32.8	34.1	33.7	39.2
24	604.2	***	589.1	264.4	284.6	367.1	196.9	225.0	310.2	35.0	33.0	34.5	34.6	40.1
25	598.9	***	596.8	263.2	284.2	391.8	198.4	226.7	321.4	36.0	33.7	35.1	35.1	41.3
26	627.3	***	612.0	271.7	287.4	394.8	200.1	227.7	320.5	36.8	34.4	35.7	36.0	42.1
27	624.6	***	642.9	272.3	292.2	399.3	199.1	231.4	321.3	37.8	35.1	36.4	36.6	43.3
28	633.9	***	661.9	273.8	297.1	414.1	198.3	234.9	331.9	38.3	35.5	37.0	37.5	44.1
29	640.2	***	688.4	276.2	298.1	418.0	197.2	237.8	331.5	38.1	35.9	37.3	38.0	45.1
30	639.3	***	717.2	274.6	295.9	425.5	200.8	238.6	339.1	38.5	36.6	38.0	38.9	45.7
31	640.1	***	730.9	274.2	304.2	425.1	202.9	240.6	336.8	39.4	37.2	38.8	39.4	46.5
32	652.7	***	740.5	275.4	307.7	427.1	204.0	242.1	336.7	39.8	37.6	39.6	40.1	47.6
33	646.9	***	750.9	271.7	323.6	439.5	205.1	247.2	346.5	40.8	38.0	39.8	41.0	48.5
34	666.5	***	763.3	278.6	332.9	447.6	207.1	253.8	353.5	41.0	38.4	40.4	41.4	48.9
35	683.6	***	769.4	291.7	337.1	445.1	211.1	256.7	349.2	41.0	39.4	40.7	42.0	49.9
36	675.5	***	767.9	286.4	336.0	440.6	213.8	259.7	347.8	40.8	40.1	41.2	42.7	50.7
37	701.8	***	779.6	292.2	331.9	447.7	216.3	259.4	351.5	42.1	40.3	41.7	43.3	51.3
38	703.1	***	787.9	300.5	335.3	453.8	222.5	258.7	354.6	44.1	41.2	42.7	44.1	52.0
39	716.8	***	805.3	298.3	345.4	461.8	220.8	261.2	363.3	43.7	41.7	43.3	44.5	52.7
40	731.7	***	818.9	302.3	354.0	475.2	225.6	265.8	367.2	43.5	42.6	43.7	45.5	53.3
41	734.7	***	791.6	310.6	369.5	443.6	229.7	278.2	351.0	43.2	43.5	44.1	46.0	54.1
42	743.2	***	796.1	318.5	380.7	444.5	233.3	283.0	351.1	43.5	44.0	44.6	46.8	54.9
43	744.8	***	791.6	323.3	380.2	453.4	234.3	285.6	359.5	43.8	44.0	45.3	47.0	55.4
44	749.8	***	787.9	326.8	403.4	445.2	237.3	293.3	352.7	44.0	45.0	45.6	47.8	56.2
45	775.8	***	787.1	351.5	455.1	449.7	247.7	314.6	356.8	44.5	45.5	46.3	48.5	56.8
46	783.2	***	806.3	382.6	419.7	479.1	261.7	307.2	373.5	44.6	46.3	46.9	48.7	57.3
47	792.3	***	823.0	392.5	434.9	484.1	272.7	322.2	374.0	45.1	46.3	47.5	49.3	58.2
48	776.6	***	860.4	371.3	416.0	559.0	265.7	313.5	423.2	45.6	46.7	47.9	50.0	58.6
49	788.4	***	876.4	388.7	418.9	564.4	268.4	318.6	430.7	46.0	48.0	48.7	50.6	59.1
50	815.4	***	861.3	416.3	398.8	542.7	280.2	306.3	421.5	46.4	48.6	49.4	51.5	59.7
51	827.2	***	870.0	436.3	403.8	556.7	293.1	309.4	430.9	48.0	49.0	49.9	52.1	60.5
52	806.7	***	866.9	419.4	396.1	547.2	290.3	302.6	427.1	49.1	49.3	50.6	53.1	61.6
53	795.6	***	848.7	400.5	420.6	526.8	286.8	314.4	407.5	49.6	50.0	51.0	53.6	62.3
54	761.6	***	797.6	389.5	412.8	751.2	287.6	308.2	767.0	50.8	51.1	51.5	54.4	63.2

Table 13. Assembly No. 2, Thermocouple Temperatures for Wall No. 1, North Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)													
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	33.4	31.0	14.8	17.3	28.7	25.5	21.7	24.2	23.5	20.8	21.0	21.0	20.9	20.8
1	156.5	180.6	98.7	70.6	119.8	84.8	83.5	99.8	82.7	20.8	21.0	20.9	20.9	20.9
2	125.2	136.5	104.2	63.7	89.2	71.3	69.9	85.5	73.2	20.8	21.0	21.1	21.0	20.9
3	188.6	209.2	120.5	81.7	128.2	91.5	88.4	109.5	92.6	21.0	21.2	21.3	21.3	21.1
4	203.2	228.6	183.2	97.2	135.0	129.2	102.7	128.2	120.2	21.3	21.5	21.5	21.7	21.4
5	287.3	340.5	237.2	120.4	194.5	147.7	128.8	162.3	135.2	21.6	21.8	22.0	22.2	21.7
6	257.0	290.7	230.0	119.6	160.1	147.1	123.3	142.8	136.0	22.0	22.2	22.6	22.6	22.3
7	331.2	344.0	316.0	143.2	194.3	183.0	149.4	172.9	159.3	22.5	23.0	23.0	23.0	22.8
8	357.9	388.3	356.8	156.2	215.5	199.9	153.4	185.3	174.6	22.9	23.4	23.7	23.3	23.4
9	397.5	418.4	386.6	158.9	227.1	222.9	154.9	186.7	187.8	23.4	23.8	24.3	23.9	24.0
10	408.3	437.3	414.2	165.2	241.0	231.6	161.7	199.5	190.3	24.0	24.3	25.0	24.5	24.7
11	417.1	460.8	439.1	171.4	263.6	244.6	166.6	214.2	201.2	24.5	24.8	25.8	25.2	25.6
12	435.5	454.7	466.9	178.8	264.0	261.7	171.8	218.9	214.8	25.0	25.3	26.6	25.9	26.4
13	453.9	474.8	498.7	192.7	276.3	281.5	178.9	226.6	227.7	25.6	26.0	27.3	26.8	27.3
14	471.1	494.4	523.6	202.4	281.7	289.6	187.6	230.6	242.8	26.3	26.4	28.0	27.3	28.2
15	479.7	496.8	567.1	210.7	285.7	306.8	193.3	237.9	252.3	26.9	27.2	29.0	28.0	29.5
16	497.5	506.9	568.6	214.0	283.3	310.3	191.0	237.2	263.8	27.8	27.8	29.6	28.6	30.5
17	497.4	520.7	563.3	218.1	296.3	317.4	196.2	246.0	270.0	28.3	28.5	30.4	29.5	31.7
18	512.1	517.2	577.7	222.4	295.7	324.4	201.1	245.7	278.4	28.9	29.1	31.0	30.1	32.6
19	536.6	515.7	573.2	226.1	308.7	312.5	204.5	255.1	274.1	29.7	29.9	31.7	31.0	33.7
20	544.4	518.8	667.0	227.6	310.9	334.6	205.9	259.5	290.7	30.7	30.3	32.0	31.8	34.7
21	548.0	512.4	715.1	227.5	310.5	339.8	207.3	259.2	294.2	31.2	30.9	32.9	32.4	35.6
22	557.3	493.4	698.0	228.7	309.6	331.4	209.1	268.3	290.0	32.0	31.2	33.6	33.2	36.8
23	570.6	485.0	731.6	231.2	297.9	342.4	211.0	264.8	296.4	31.8	32.3	34.1	34.1	37.7
24	583.6	460.9	736.4	238.1	297.5	347.6	216.3	264.4	301.3	33.1	33.3	34.4	35.1	38.4
25	585.0	455.2	754.6	236.8	296.9	357.8	217.6	266.3	311.9	34.1	34.0	35.1	35.7	39.6
26	613.3	465.9	761.9	244.4	296.5	359.9	221.7	265.5	312.5	34.6	34.5	35.5	36.2	40.6
27	617.5	481.9	788.7	244.5	303.5	363.7	222.6	272.2	313.8	35.5	34.7	36.2	37.2	41.3
28	624.3	502.6	791.7	246.3	308.9	374.4	223.8	274.0	322.1	36.0	35.4	36.5	38.1	41.9
29	651.0	512.4	801.1	249.0	310.0	377.4	222.5	277.2	323.0	37.2	36.1	37.0	38.7	43.0
30	667.7	520.7	811.1	252.8	308.2	383.2	228.1	277.0	329.8	37.8	36.6	37.6	39.5	44.0
31	672.2	558.6	815.4	255.9	315.0	385.8	231.1	280.1	330.0	37.9	36.5	38.6	40.3	44.7
32	683.3	600.2	828.3	258.7	318.8	389.0	231.4	279.7	335.0	37.5	37.3	39.1	40.8	45.7
33	678.7	649.7	830.0	258.6	336.4	396.2	232.0	286.4	341.4	38.5	37.1	39.5	41.5	46.4
34	692.9	688.6	848.4	263.6	347.2	401.5	234.3	293.5	345.8	39.4	38.4	40.0	41.9	47.5
35	708.4	696.4	843.9	273.8	348.0	401.4	238.6	296.2	343.8	39.9	38.7	40.1	42.7	47.9
36	699.3	703.2	836.8	233.1	345.3	397.3	239.5	298.5	343.9	41.2	39.1	40.8	43.3	48.4
37	721.1	699.7	845.6	228.5	342.5	401.9	242.6	295.2	346.8	41.1	40.6	42.0	44.1	49.1
38	723.4	706.7	847.1	240.3	344.6	407.6	248.1	292.7	348.4	42.4	39.8	42.8	44.4	50.0
39	744.3	729.5	873.6	245.7	355.8	413.9	245.3	296.2	356.1	43.7	40.5	43.7	45.4	51.0
40	777.8	774.1	886.8	252.7	366.4	424.8	238.4	302.1	360.8	43.3	40.7	43.6	46.1	51.3
41	784.4	777.4	849.9	261.8	375.9	404.0	244.9	315.7	346.6	43.6	40.7	43.9	46.8	51.8
42	797.4	786.7	868.0	270.6	388.6	403.9	250.4	320.4	346.2	43.6	40.8	44.4	47.4	52.8
43	795.2	788.1	858.2	276.0	386.2	409.9	253.2	321.2	352.5	44.0	41.7	45.1	47.5	53.3
44	797.9	792.3	858.5	281.1	339.1	403.7	256.5	330.0	346.1	44.5	42.0	45.4	48.6	54.1
45	814.6	843.6	846.7	299.8	399.0	405.4	269.3	367.6	348.1	44.5	42.3	46.3	48.6	54.4
46	823.2	811.8	870.5	321.7	386.1	424.0	287.9	347.8	361.5	44.8	42.8	47.0	49.5	54.9
47	833.1	804.3	888.7	333.2	406.4	430.8	301.9	367.4	364.3	45.1	43.6	47.8	50.2	55.5
48	837.0	792.6	925.9	321.7	383.0	488.0	291.4	347.5	407.3	45.7	44.0	48.9	50.1	56.0
49	844.0	816.4	943.6	333.4	385.9	501.6	293.8	353.1	415.7	45.9	44.3	49.2	51.3	56.9
50	865.1	813.0	930.7	357.4	850.4	489.7	310.3	818.7	409.1	46.4	44.3	50.1	52.4	56.9
51	882.7	833.9	948.7	375.4	851.5	499.3	324.7	836.9	420.4	46.4	44.4	50.5	53.3	57.7
52	857.1	831.5	805.9	374.9	809.7	802.2	323.6	790.7	810.0	47.4	45.3	50.6	53.5	58.3
53	778.0	816.8	819.8	734.5	822.0	808.8	731.1	809.6	825.4	48.4	46.0	51.6	54.8	58.7
54	803.3	777.4	810.8	823.5	818.2	812.4	814.1	814.2	824.4	48.5	45.8	51.9	55.0	59.5

Table 14. Assembly No. 2, Thermocouple Temperatures for Wall No. 1, South Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)													
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	21.4	20.3	30.7	19.2	17.0	15.0	21.2	21.2	19.0	20.8	20.8	20.8	20.8	20.7
1	163.7	165.2	320.7	97.4	86.5	79.9	65.1	87.2	78.6	21.5	21.7	21.6	21.8	21.5
2	135.8	130.5	183.8	81.1	75.7	77.4	61.3	68.8	69.0	22.1	22.4	22.5	22.8	22.2
3	186.1	167.2	272.3	96.9	85.9	83.2	69.1	79.7	78.7	22.3	22.7	22.8	22.8	22.5
4	190.9	226.5	308.7	113.8	139.3	119.6	84.4	115.1	103.9	23.0	23.9	23.9	23.9	23.4
5	292.9	293.0	473.6	168.4	159.4	155.8	109.5	136.0	131.5	23.8	24.8	25.9	25.2	24.4
6	254.3	271.5	433.8	146.7	201.6	176.5	106.5	154.8	141.9	24.5	25.9	27.9	26.6	25.6
7	305.2	326.2	450.7	139.7	209.0	180.7	106.3	157.8	142.9	25.4	26.9	28.8	27.5	26.8
8	352.7	349.9	498.0	138.4	199.4	192.8	105.7	155.0	153.0	26.1	27.8	29.9	28.9	27.8
9	366.2	371.2	529.9	136.4	196.3	199.7	105.5	155.5	160.5	26.7	28.4	31.1	30.2	28.6
10	393.8	412.8	550.7	141.3	218.4	217.3	111.6	171.0	174.4	27.3	29.3	32.3	30.8	30.1
11	399.7	401.5	541.9	137.3	205.2	218.1	108.9	160.6	176.1	27.7	30.3	33.2	32.5	31.8
12	408.6	420.3	570.6	140.8	215.8	231.1	113.5	168.0	188.6	28.5	30.9	34.4	32.9	33.2
13	441.1	458.8	613.5	154.0	245.5	250.3	124.1	187.4	210.7	29.1	31.9	35.6	34.5	34.4
14	505.5	491.8	624.3	171.8	272.3	263.9	133.7	200.4	226.4	30.4	33.2	37.4	35.8	36.3
15	539.5	508.6	635.5	193.0	285.3	269.7	140.2	207.1	232.9	32.7	34.1	38.8	37.2	37.2
16	533.5	523.3	624.7	197.9	295.5	282.3	145.8	215.6	247.5	34.1	34.9	41.1	38.9	38.3
17	532.6	520.6	634.5	202.7	304.5	287.2	150.7	223.7	253.9	35.7	36.1	42.7	40.3	39.9
18	536.7	543.3	646.6	208.1	309.6	292.1	154.8	230.1	259.5	36.6	37.3	43.7	42.5	41.0
19	548.3	575.7	681.4	217.0	325.8	309.8	160.9	240.5	276.6	37.8	38.3	45.2	44.2	43.0
20	545.2	571.1	703.4	222.5	322.7	314.6	162.6	244.2	283.7	38.9	39.3	47.4	45.6	43.7
21	547.8	581.7	706.7	225.7	321.1	313.7	164.6	243.7	286.6	40.1	40.6	48.5	47.0	45.1
22	570.2	599.3	725.3	233.8	332.2	327.2	169.8	250.1	296.5	40.9	41.6	50.3	49.1	46.6
23	597.0	615.2	724.9	243.3	338.3	327.1	173.9	255.4	294.3	42.2	42.7	52.0	49.6	47.9
24	587.0	620.5	746.3	246.4	346.5	337.8	178.3	266.8	300.8	43.2	43.9	55.0	51.5	48.1
25	618.0	630.0	740.6	254.9	352.6	343.3	182.7	269.0	305.3	44.2	44.9	55.9	52.8	49.2
26	608.7	619.4	756.3	253.8	341.3	363.3	182.4	265.7	306.8	45.1	46.0	57.1	55.5	50.8
27	610.7	636.5	770.2	258.8	352.2	374.0	187.4	270.3	307.7	45.8	46.7	59.9	55.1	51.8
28	612.3	638.6	792.6	259.5	345.4	385.5	187.2	267.9	309.6	46.8	47.5	61.1	56.9	52.8
29	610.0	644.1	793.6	260.6	347.1	392.3	189.3	268.3	315.5	47.2	48.3	62.8	59.2	54.6
30	600.7	657.7	816.0	263.1	346.9	402.0	192.5	273.1	318.6	48.0	49.3	63.3	59.8	55.5
31	624.9	662.9	810.2	265.7	341.3	401.1	193.1	272.2	318.7	48.9	49.4	65.3	62.6	56.4
32	611.5	657.6	810.0	263.2	328.0	396.7	193.1	268.9	313.6	49.6	50.6	65.3	64.0	57.7
33	608.8	663.3	817.3	265.4	326.5	403.6	194.2	269.5	319.9	50.0	51.1	66.0	64.6	58.3
34	645.4	688.9	817.9	272.5	334.0	393.1	198.8	272.3	310.5	50.7	52.3	68.1	65.1	59.7
35	637.2	689.0	831.6	272.6	334.3	403.9	198.1	272.4	316.1	51.4	52.2	68.5	66.1	60.4
36	642.4	702.9	854.3	276.3	345.1	423.3	200.8	279.3	329.5	51.9	53.9	70.2	66.7	61.7
37	635.5	710.4	844.2	277.2	345.8	420.7	202.1	282.3	326.2	52.9	54.9	70.6	68.3	62.4
38	660.2	730.0	857.5	282.9	353.8	435.3	205.3	287.5	339.6	53.4	56.6	72.9	69.3	64.7
39	654.8	754.7	841.3	286.7	356.2	425.0	208.3	292.3	332.9	53.7	56.9	73.9	70.5	64.5
40	688.0	775.9	845.0	295.8	363.0	427.8	212.6	295.8	334.7	54.8	58.5	75.3	72.9	66.0
41	695.7	793.1	848.3	305.1	372.3	434.2	216.9	303.6	340.4	55.5	60.1	76.3	71.7	66.7
42	698.2	785.9	830.1	304.8	363.5	418.9	218.3	300.2	327.5	56.6	61.5	78.3	73.6	67.4
43	719.6	789.2	823.4	309.1	360.5	409.5	220.3	297.6	322.3	57.2	62.5	79.0	75.3	68.9
44	724.7	795.8	826.1	312.1	362.4	411.8	224.2	299.0	323.9	57.8	62.9	80.2	74.0	70.0
45	728.7	808.7	831.0	323.9	382.7	407.5	227.2	307.3	325.6	57.9	65.0	80.1	75.0	70.7
46	732.6	811.8	849.3	326.2	387.2	415.6	229.6	308.7	331.4	59.2	66.4	82.0	75.3	72.5
47	763.3	817.1	950.8	338.5	396.8	454.7	235.8	321.4	365.2	59.7	67.0	81.6	78.6	74.4
48	758.5	842.8	925.3	336.1	430.1	500.2	237.6	342.3	396.4	60.1	67.7	86.5	80.5	78.5
49	724.0	878.5	940.3	335.1	439.6	504.2	239.8	346.9	397.0	61.0	69.5	90.0	81.0	80.8
50	781.1	869.4	937.9	332.4	424.8	496.6	239.2	333.8	388.5	62.1	70.6	91.1	87.1	82.6
51	854.5	911.9	963.8	338.2	420.6	483.0	238.2	327.8	380.1	61.8	71.4	90.6	87.0	85.0
52	870.1	911.5	975.0	365.7	410.1	480.7	241.5	317.1	371.3	62.7	72.5	90.1	86.7	85.1
53	865.9	912.7	933.5	361.1	414.1	481.6	240.6	318.8	370.5	63.8	73.3	90.3	84.0	86.6
54	872.5	911.5	938.3	350.8	407.7	484.9	241.6	311.0	372.4	64.9	73.1	92.0	84.7	88.5

Table 15. Assembly No. 2, Thermocouple Temperatures for Wall No. 2, North Section (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples °C)													
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	23.8	23.8	17.9	19.1	16.2	14.7	19.6	19.4	18.3	20.8	20.7	20.7	20.6	20.5
1	189.4	243.7	183.4	97.9	89.2	55.6	65.1	68.0	66.7	21.8	22.3	22.4	22.9	21.8
2	126.7	160.2	157.5	75.4	69.9	69.2	56.8	63.1	65.9	22.9	23.1	23.3	24.5	22.8
3	188.1	220.5	199.2	89.0	86.3	67.0	63.1	71.8	69.6	23.2	23.5	23.8	24.6	23.0
4	195.7	273.6	256.7	110.1	148.6	94.5	81.2	105.7	95.7	24.3	24.8	25.9	27.4	24.4
5	272.8	358.2	376.5	155.4	162.4	105.1	102.8	124.0	114.8	25.5	26.4	27.3	29.3	25.7
6	225.8	303.0	366.0	134.9	193.2	118.3	102.1	141.2	124.7	26.7	27.6	29.3	31.0	27.3
7	273.2	379.4	392.1	132.0	193.7	130.6	102.5	145.4	131.5	27.3	28.8	31.6	33.2	29.0
8	302.0	400.0	427.6	131.9	183.5	143.9	102.1	146.3	140.7	28.2	29.6	33.0	35.5	30.1
9	287.1	403.8	438.3	131.5	182.2	153.2	102.1	145.5	149.4	28.9	30.5	34.4	36.9	31.3
10	279.8	398.7	445.0	136.2	203.9	165.8	107.5	160.7	161.8	29.9	31.7	36.3	38.6	33.6
11	268.3	367.2	423.1	132.5	191.4	173.9	106.5	154.4	166.8	30.5	32.2	37.0	39.9	35.4
12	256.5	363.5	434.7	136.7	201.2	179.7	109.9	161.8	176.6	31.3	33.3	38.6	42.1	36.9
13	280.1	376.1	452.5	148.7	227.0	193.6	119.0	178.4	191.8	32.3	34.4	40.5	43.9	38.3
14	297.3	421.1	452.8	163.7	252.0	210.3	129.3	193.8	205.9	33.3	35.7	42.2	45.5	40.3
15	325.9	460.2	477.2	180.6	265.1	221.0	136.7	200.1	215.4	34.8	37.0	43.9	48.6	42.1
16	315.0	553.2	532.1	180.1	272.5	235.0	124.2	208.8	231.2	35.9	38.4	45.5	48.9	44.0
17	300.6	589.7	611.5	179.6	278.2	243.7	121.9	217.3	240.1	36.7	39.6	47.5	52.1	45.9
18	351.1	632.7	653.4	181.0	283.8	250.3	119.3	224.5	247.5	37.7	40.5	48.5	53.8	47.2
19	470.7	702.1	694.7	185.1	299.7	263.4	120.8	233.7	261.0	38.9	42.0	50.4	55.7	48.8
20	491.7	703.2	726.4	186.6	296.2	271.0	121.1	238.7	268.7	39.6	43.3	51.9	56.9	50.5
21	505.7	716.4	720.3	189.6	295.1	275.4	124.4	242.3	272.6	40.1	44.0	53.5	59.9	52.0
22	530.8	718.3	740.4	194.6	306.1	284.6	129.3	249.1	281.4	41.7	45.6	55.4	62.2	53.8
23	547.5	748.5	743.0	202.4	318.7	286.8	135.2	253.9	281.2	42.4	46.8	57.0	63.1	54.9
24	548.2	737.8	763.8	206.7	325.7	293.9	148.5	262.5	287.7	43.4	48.1	58.3	65.8	57.0
25	606.0	757.0	761.0	214.9	337.1	300.4	157.8	270.5	291.6	43.7	49.1	59.0	67.0	58.6
26	614.8	729.2	776.6	213.4	325.7	305.9	162.1	267.7	297.5	44.8	50.0	61.6	68.7	60.2
27	634.6	751.7	797.9	203.0	337.2	310.1	168.5	271.2	297.9	45.8	51.2	63.1	70.1	61.3
28	648.0	767.1	845.1	205.9	331.7	314.5	170.9	266.3	301.3	46.4	51.8	64.5	72.4	63.2
29	649.5	761.7	854.1	209.2	333.1	322.3	174.8	266.9	306.7	47.3	52.8	65.8	72.6	64.4
30	650.5	771.2	885.0	213.0	340.9	328.0	178.7	272.6	311.4	48.2	54.2	67.4	74.0	65.5
31	683.8	767.7	877.6	217.2	340.4	331.3	181.9	271.3	312.4	49.0	54.6	69.4	76.2	66.8
32	665.7	749.3	875.4	217.2	330.3	331.6	184.7	267.3	310.4	49.9	55.2	70.5	75.7	68.1
33	666.5	758.6	880.5	221.5	331.2	336.3	187.6	267.9	316.2	49.9	56.3	71.9	77.1	69.7
34	709.6	812.7	908.5	229.3	343.5	333.5	191.7	270.7	308.0	51.0	57.0	73.1	79.4	70.5
35	702.1	794.4	910.5	231.9	342.5	339.1	195.0	271.3	314.4	51.6	58.0	74.3	79.9	71.8
36	701.2	811.4	958.2	237.0	353.6	349.2	199.5	277.4	326.9	52.5	58.8	76.3	80.9	73.1
37	694.5	803.7	950.8	239.8	354.4	353.3	203.1	281.6	325.4	53.2	59.3	77.6	81.8	74.5
38	734.2	825.0	959.7	245.3	362.0	364.3	207.8	286.6	338.8	54.0	61.1	78.3	83.1	76.0
39	718.3	851.3	924.6	250.6	368.5	363.7	212.8	290.8	332.5	54.5	62.0	79.7	83.5	77.1
40	749.3	845.4	956.6	259.1	376.3	365.7	219.2	294.9	335.4	55.5	62.7	82.2	85.3	78.0
41	755.5	860.0	970.5	266.9	384.8	369.4	225.4	300.5	341.5	56.6	63.8	84.0	87.2	79.3
42	739.2	824.1	914.0	269.9	373.5	362.8	228.6	296.9	329.4	56.9	64.4	84.2	86.1	81.0
43	762.9	824.4	897.8	274.6	370.4	357.1	231.4	294.4	324.7	57.6	65.6	85.6	87.1	81.2
44	763.2	824.1	898.2	278.7	370.0	355.8	234.5	295.5	326.1	58.0	66.8	86.1	87.4	82.3
45	756.2	829.7	885.6	289.3	388.5	354.0	239.5	303.1	328.6	58.7	67.7	88.4	87.7	83.9
46	759.8	829.8	878.4	294.3	391.2	357.8	241.7	304.8	334.1	59.7	68.1	90.3	89.1	85.5
47	771.2	882.3	902.5	305.3	397.0	381.5	248.6	314.9	368.6	60.7	69.2	92.4	91.9	87.5
48	804.4	900.1	921.0	304.5	426.8	415.1	250.6	334.3	401.3	61.1	70.9	94.5	94.5	89.7
49	829.1	895.2	911.5	304.2	432.6	429.8	253.4	336.6	402.4	61.9	71.8	98.3	96.8	93.5
50	844.6	889.0	901.2	302.6	418.3	430.7	253.2	321.4	393.6	62.4	72.5	101.9	101.1	95.8
51	881.0	906.1	925.0	308.5	417.0	423.2	252.8	312.3	383.0	63.1	72.3	104.2	101.8	97.2
52	856.7	882.2	927.5	330.9	405.7	421.4	257.9	301.8	372.0	64.1	73.0	105.0	100.6	98.8
53	862.6	905.0	918.4	329.6	408.0	421.7	255.1	306.5	368.3	65.5	74.3	109.1	101.5	100.3
54	865.5	892.0	915.5	321.8	401.1	423.3	253.3	305.2	375.7	66.0	73.9	106.5	99.3	102.3

Table 16. Assembly No. 2, Thermocouple Temperatures for Wall No. 2, South Section (Contract No. A1042)

TIME	Temperatures Measured at internal Furnace Thermocouples (°C)									T(Fav)	CAN/ULC-S101	Furnace Pressure
(min)	F1	F2	F3	F4	F5	F6	F7	F8	F9	°C	°C	Pa
0	25.7	26.1	26.4	26.0	26.6	24.9	24.9	25.2	24.9	25.6	20.0	41.9
1	31.0	34.9	43.9	33.3	47.9	29.9	28.4	38.0	33.0	35.6	170.3	16.6
2	106.6	137.2	166.9	114.7	184.1	70.9	65.1	85.2	99.0	114.4	293.4	9.4
3	257.3	301.9	341.5	264.5	350.4	156.6	147.0	180.8	220.7	246.7	393.3	17.9
4	388.2	409.9	439.2	388.6	447.1	253.2	246.2	279.3	326.5	353.1	473.6	9.0
5	493.5	506.2	542.6	492.9	544.3	355.1	344.8	390.6	438.9	456.6	537.8	5.8
6	597.0	597.2	626.8	596.2	628.4	460.4	447.2	510.8	547.3	556.8	588.6	18.5
7	610.2	588.6	606.1	607.9	622.0	506.1	501.0	552.2	574.2	574.3	628.7	9.3
8	638.5	621.0	644.4	638.2	654.4	544.1	538.3	595.0	610.5	609.4	660.1	7.8
9	671.5	650.8	672.3	672.1	682.9	577.9	574.0	634.1	647.0	642.5	684.8	4.4
10	694.3	672.3	695.2	696.7	704.2	603.4	601.3	663.6	675.5	667.4	704.2	7.5
11	726.1	703.5	727.0	730.3	735.6	635.0	631.9	697.7	708.6	699.5	719.7	7.8
12	732.3	705.6	725.6	736.2	738.6	649.2	648.3	707.9	716.6	706.7	732.3	3.2
13	749.6	724.2	744.4	754.2	756.3	667.3	666.1	726.4	733.6	724.7	742.8	4.1
14	756.1	729.3	751.1	760.5	761.6	676.9	677.5	735.3	739.9	732.0	751.9	5.9
15	771.5	745.0	765.7	776.4	777.2	691.6	691.9	750.8	754.8	747.2	759.9	6.0
16	777.6	749.6	770.1	782.6	781.6	700.2	701.5	757.2	761.4	753.5	767.3	9.6
17	783.1	754.4	775.8	789.0	787.0	705.2	707.2	764.9	768.2	759.4	775.2	8.1
18	791.3	764.2	783.9	798.0	795.3	713.8	714.7	774.7	777.7	768.2	781.0	9.5
19	799.7	772.3	791.8	806.3	803.2	722.7	722.6	783.0	786.8	776.5	787.5	8.6
20	806.9	779.7	798.8	814.1	810.4	730.9	729.9	790.7	794.6	784.0	793.8	8.1
21	813.8	786.0	806.1	820.9	815.9	738.0	736.9	797.5	800.8	790.7	799.9	6.3
22	818.9	790.9	811.3	825.9	821.3	743.9	742.7	802.8	806.8	796.1	805.7	9.3
23	824.4	796.7	816.6	831.1	826.5	750.1	748.4	808.5	813.1	801.7	811.4	9.7
24	830.1	802.4	823.3	836.4	831.8	755.5	754.4	814.1	818.8	807.4	816.7	12.3
25	835.5	807.9	828.9	841.9	837.0	762.5	760.4	820.2	824.5	813.2	821.8	11.9
26	838.9	810.1	833.4	845.3	838.2	766.0	764.7	823.6	827.9	816.5	826.5	9.5
27	842.5	813.1	838.3	849.4	840.2	770.4	768.7	826.7	830.9	820.0	831.0	9.4
28	846.2	816.2	844.5	853.8	843.3	776.8	772.9	830.2	834.0	824.2	835.2	9.2
29	851.1	821.1	849.0	858.5	847.2	780.7	778.0	835.7	838.4	828.9	839.1	10.5
30	855.4	825.3	853.0	863.1	852.1	785.7	782.2	839.8	843.9	833.4	842.9	8.8

Table 17. Assembly No. 3, Internal Furnace Pressure and Thermocouple Temperatures (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples (°C)																							
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
0	24.6	24.6	24.7	24.7	24.2	24.7	24.8	24.7	24.4	24.6	24.6	24.7	24.8	25.1	25.0	24.6	24.7	24.6	24.5	24.7	24.5	24.6	24.5	24.9	24.5
1	24.7	24.9	24.9	25.0	24.6	25.5	27.4	26.8	42.0	90.5	24.9	25.0	25.8	26.0	27.1	38.7	35.2	33.0	53.5	103.4	24.8	25.6	26.0	25.4	25.6
2	24.7	24.8	24.8	24.8	24.4	24.8	26.1	26.6	32.8	67.2	24.7	24.9	25.3	25.6	26.9	33.9	39.7	32.8	60.8	152.7	24.7	25.4	25.4	25.3	25.0
3	24.7	24.7	24.8	25.0	25.7	26.0	26.6	26.4	33.5	77.5	24.8	25.1	25.6	26.5	30.7	37.4	45.3	38.7	68.1	207.4	24.7	25.5	26.9	26.1	26.0
4	24.7	24.7	24.8	24.9	25.3	26.1	26.4	26.0	36.7	84.8	24.7	24.9	25.3	26.4	29.2	34.6	44.7	35.1	88.5	243.3	24.6	25.3	27.9	25.8	25.9
5	27.5	25.7	27.1	27.3	27.7	28.2	27.1	26.5	44.5	120.7	47.0	31.2	42.7	30.5	41.6	50.2	48.0	35.7	120.0	351.7	25.1	47.8	52.6	31.8	29.5
6	42.4	37.9	39.9	39.4	33.3	36.3	31.4	31.6	37.4	86.9	49.8	54.9	55.4	48.0	49.0	50.7	54.7	41.3	93.6	291.7	26.0	48.3	61.6	57.7	48.5
7	39.5	31.5	36.2	34.7	32.1	34.9	34.5	38.1	75.7	199.9	53.7	46.6	49.9	43.9	42.8	48.1	50.9	40.1	134.7	394.7	28.2	58.7	61.3	49.7	53.5
8	43.1	45.8	53.1	41.1	34.5	35.1	35.0	36.4	64.9	165.1	68.6	62.3	62.5	53.1	44.4	53.4	51.6	39.6	154.1	431.6	29.6	62.6	73.2	61.3	68.8
9	65.2	49.8	58.1	47.7	37.8	38.7	38.2	41.9	81.4	207.1	66.1	69.0	64.4	53.9	45.4	50.3	51.8	42.7	170.8	466.4	31.7	57.3	79.9	67.1	72.7
10	65.5	52.1	55.2	46.2	39.3	45.1	50.4	45.5	101.5	267.4	65.1	69.7	61.9	51.8	45.1	47.3	54.1	43.8	184.2	479.0	33.9	59.8	82.4	70.5	72.9
11	65.2	53.0	54.9	46.9	42.0	48.0	51.4	50.4	103.5	276.3	66.8	71.3	61.2	52.9	45.7	47.6	58.9	46.7	181.2	470.7	36.4	62.7	85.2	73.3	73.5
12	58.4	51.9	54.1	47.9	44.6	58.6	48.4	48.4	121.1	329.4	73.8	69.1	59.2	52.3	46.1	52.5	60.2	50.8	212.1	516.7	39.1	64.2	88.0	74.6	74.6
13	56.5	49.3	56.3	50.7	47.1	51.1	52.8	47.9	125.3	350.1	73.9	68.3	57.8	53.1	47.6	54.1	64.3	52.6	205.6	518.1	40.6	63.4	90.6	72.6	74.4
14	55.0	49.4	60.7	53.5	50.4	51.5	48.9	50.9	149.7	415.0	77.8	62.8	58.3	54.4	48.3	57.0	65.0	54.9	218.0	531.0	41.9	64.7	92.1	74.6	75.2
15	55.4	51.1	63.8	56.7	53.8	51.8	49.0	51.9	159.7	440.7	74.8	66.5	56.8	55.4	49.4	54.4	64.4	56.5	224.0	536.0	43.5	64.6	94.0	75.4	75.4
16	58.6	52.2	65.9	61.6	56.7	53.8	51.8	54.2	166.7	454.1	71.9	65.0	58.9	55.8	50.5	59.6	65.6	57.1	218.5	537.2	45.4	66.8	95.8	78.6	77.8
17	63.6	65.0	72.2	64.6	54.8	52.3	55.9	73.4	216.9	537.6	72.2	61.8	64.4	56.6	50.8	65.1	67.1	59.1	261.0	557.9	46.6	75.8	96.1	97.5	80.7
18	66.4	68.8	77.5	64.9	55.3	61.3	73.8	88.1	241.1	566.7	73.9	60.7	65.9	57.4	52.2	67.4	73.8	60.6	289.5	568.8	47.1	82.7	97.6	113.9	83.9
19	68.2	71.1	83.8	67.9	59.8	67.5	79.8	124.2	260.3	590.1	75.5	60.6	67.4	57.7	53.0	78.3	85.1	70.1	288.7	570.6	50.1	88.1	100.9	134.0	87.5
20	69.6	73.4	90.1	69.7	65.2	75.2	93.7	172.5	271.2	604.9	74.7	60.6	67.9	57.8	54.2	83.8	102.5	75.8	293.6	578.7	55.0	94.7	105.3	150.5	92.1
21	68.5	72.1	94.3	71.1	68.0	90.3	109.9	195.8	269.1	542.3	77.5	61.6	69.3	58.9	55.0	74.9	109.9	78.8	288.4	541.7	56.3	99.1	108.7	146.9	96.4
22	67.9	73.6	96.4	72.4	72.5	130.8	122.1	226.0	280.4	579.7	75.9	61.1	68.4	58.0	55.2	71.4	109.8	83.1	296.8	559.6	57.9	103.8	111.9	148.2	98.4
23	69.0	77.2	99.0	74.3	75.5	158.0	135.3	251.9	296.5	571.1	73.2	60.8	68.0	57.6	54.9	72.9	113.1	89.2	310.2	567.5	65.6	107.4	115.4	153.9	101.8
24	71.0	80.6	101.7	75.6	79.2	179.0	147.5	266.6	312.8	564.5	71.4	60.7	67.9	57.4	54.7	77.1	116.9	96.3	321.8	564.7	68.9	111.0	118.6	157.3	104.9
25	73.2	83.8	103.5	76.8	86.4	192.7	157.5	268.4	324.4	552.8	70.3	60.7	67.6	57.2	54.7	79.5	119.5	103.5	328.4	556.7	72.0	115.5	121.1	156.1	107.6
26	76.2	86.1	104.5	78.3	91.8	202.4	166.0	274.3	334.7	546.2	69.9	60.5	66.9	57.0	54.5	83.3	122.2	110.3	336.2	558.9	73.5	119.2	123.5	157.2	110.3
27	79.0	88.5	105.3	80.4	96.8	207.3	174.8	281.1	343.6	538.7	68.8	60.6	67.0	56.9	54.0	95.1	126.2	117.2	343.9	571.1	77.1	123.1	126.4	163.8	113.3
28	80.2	89.7	105.8	84.0	102.0	213.1	182.2	283.3	354.0	544.9	68.1	60.8	66.9	57.0	53.8	104.6	131.0	123.4	350.6	575.0	81.3	126.7	129.3	168.0	116.6
29	80.6	90.1	106.7	87.7	106.5	214.9	188.4	282.2	357.3	542.8	67.6	61.1	66.7	57.4	53.8	112.2	135.6	129.1	355.8	572.8	84.5	130.0	132.1	170.7	119.5
30	80.0	89.6	107.5	91.8	110.5	216.5	193.2	279.0	360.0	544.7	67.4	61.3	66.7	57.6	53.8	123.3	139.9	134.2	359.4	585.3	87.6	132.6	134.8	175.6	122.7
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0	24.5	24.8	24.3	24.5	25.0	24.7	24.7	25.0	24.2	24.4	24.8	24.8	24.2	24.3	24.2	24.5	24.8	24.8	24.4	24.4	24.1	24.2	24.0	23.8	24.5
1	26.1	30.2	35.0	77.4	97.3	25.1	25.5	27.9	25.4	27.1	34.6	32.8	29.9	76.1	112.0	24.9	25.3	25.5	26.2	25.7	27.0	29.1	37.7	54.1	81.8
2	26.0	36.1	42.7	64.6	105.6	24.9	25.0	26.6	25.4	26.1	29.2	30.4	34.8	54.8	77.3	24.6	25.0	25.0	25.4	25.1	26.1	27.2	29.9	36.6	47.1
3	32.3	50.1	67.8	84.1	155.8	24.9	25.0	32.9	33.1	29.3	49.1	50.8	47.2	81.8	143.2	25.4	25.6	25.9	26.5	29.4	29.7	32.0	38.8	36.7	51.1
4	37.0	50.4	83.8	138.3	175.9	24.8	24.9	33.4	40.0	40.1	64.1	55.3	58.2	118.8	152.2	24.9	25.5	27.7	28.9	35.1	29.8	34.4	43.9	36.5	50.8
5	60.9	65.3	134.3	238.0	309.2	26.5	28.1	60.1	54.7	69.8	91.8	84.6	63.4	211.3	307.3	27.9	31.9	46.4	34.2	34.0	53.3	58.8	56.1	98.7	161.3
6	58.7	71.4	132.5	152.8	286.7	29.4	27.8	61.2	56.2	65.4	79.8	91.8	67.3	155.3	281.9	29.9	37.5	43.1	42.9	39.6	53.4	57.1	66.0	92.0	159.1
7	62.7	74.0	154.0	265.5	344.7	30.7	28.4	64.4	59.7	77.8	101.4	102.1	70.1	226.8	318.0	32.2	35.8	46.6	43.4	40.0	60.8	64.0	64.9	111.7	183.4
8	73.6	84.7	183.9	296.6	411.6	32.2	30.3	65.6	67.0	90.4	111.6	121.6	79.2	273.7	385.7	38.5	39.5	53.6	62.9	46.4	70.0	76.1	104.9	174.4	282.9
9	75.5	93.1	204.2	315.5	454.6	34.6	32.5	71.4	66.6	96.6	145.5	146.9	93.7	297.4	419.3	53.8	56.2	63.5	71.3	55.3	73.9	89.6	138.6	202.8	342.9
10	76.1	100.8	216.0	332.3	479.4	38.0	35.5	79.5	67.4	103.5	176.3	167.8	109.6	322.7	449.5	63.2	65.1	67.7	74.4	63.7	82.8	98.0	143.2	221.8	381.2
11	78.3	108.3	223.1	330.6	491.9	40.3	38.6	87.9	68.8	111.1	192.9	183.9	127.0	326.8	468.9	64.9	67.9	70.4	79.2	72.3	97.9	108.8	162.6	231.4	415.4
12	83.7	115.5	238.1	380.6	528.9	41.3	40.7	96.2	70.2	119.1	213.4	199.0	141.8	361.8	505.2	67.6	70.9	72.9	86.3	75.7	107.1	118.4	178.5	257.0	475.8
13	85.5	123.5	248.6	373.4	536.3	42.7	42.1	107.7	73.4	126.3	226.6	209.7	157.4	349.0	516.3	69.6	73.1	74.8	92.5	78.2	114.0	128.8	186.2	263.1	494.1
14	90.1	130.5	260.2	394.7	547.6	45.0	43.6	121.8	81.9	137.0	239.4	221.5	166.6	357.6	541.1	69.9	76.6	78.6	99.9	78.1	123.5	140.4	191.5	277.7	541.2
15	93.2	136.6	264.5	386.0	542.1	47.6	44.5	128.2	93.6	146.2	248.1	228.1	179.0	370.8	552.7	71.4	81.4	84.7	105.4	77.9	131.4	149.6	193.9	286.2	557.3
16	98.4	140.0	268.8	351.1	554.4	49.0	46.1	133.5	104.8	153.2	252.2	233.3	177.0	375.1	559.0	72.4	85.1	91.7	112.3	87.2	140.1	156.8	192.7	295.2	577.3
17	104.3	146.4	280.1	415.9	564.7	51.8	48.0	142.0	109.8	161.6	260.7	236.2	170.2	390.8	571.5	73.5	90.5	99.5	122.5	102.6	149.4	171.3	186.1	323.5	616.5
18	108.7	153.9	288.5	427.7	577.1	56.4	50.5	149.5	113.4	169.1	267.5	237.2	164.6	383.0	574.1	74.9	96.8	107.8	131.0	114.4	157.9	186.6	197.0	343.4	642.7
19	115.4	161.8	296.5	391.3	601.8	61.3	53.1	156.4	117.2	176.4	273.2	239.4	165.1	389.3	570.2	76.5	103.0	115.6	139.3	124.3	166.4	199.6	215.5	366.6	655.1
20	126.2	168.8	303.2	374.0	616.7	64.3	55.3	163.2	121.5	184.1	276.9	242.6	175.0	399.4	578.9	78.9	108.9	122.3	146.4	132.8	174.6	211.2	231.5	388.6	655.8
21	129.0	175.4	302.7	288.2	578.7	63.3	56.3	168.4	122.1	186.8	274.3	243.6	179.7	362.3	541.2	80.2	113.3	129.2	154.7	136.9	182.5	220.2	234.0	373.3	598.2
22	130.3	180.3	305.8	259.2	601.1	67.4	57.7	172.9	124.8	190.6	277.1	244.5	184.6	365.7	537.3	83.0	117.5	134.6	160.5	141.5	189.1	226.2	244.9	370.6	567.6
23	132.8	184.4	314.5	252.6	613.2	72.4	58.6	177.2	129.3	194.6	280.1	245.9	189.6	378.3	530.5	86.4	121.6	139.4	166.5	146.9	193.0	232.2	253.4	369.4	572.5
24	135.7	189.5	313.3	246.4	627.2	76.6	60.0	181.2	135.6	198.7	281.2	246.6	194.4	359.7	533.8	90.9	125.7	144.2	171.5	152.3	196.3	237.7	260.8	374.0	588.3
25	139.3	195.2	316.6	240.8	613.6	82.3	61.5	184.4	142.0	200.8	284.8	247.3	197.4	341.2	526.9	95.8	129.7	149.0	175.3	157.8	201.2	242.5	264.1	347.8	588.4
26	143.0	200.9	321.4	237.7	623.5	87.9	62.3	186.9	147.0	202.5	283.7	248.6	199.9	338.6	532.8	100.1	133.4	153.4	178.2	163.3	203.6	246.2	264.9	336.3	580.5
27	143.9	205.6	325.2	240.7	643.2	94.0	63.1	189.1	151.4	206.3	287.3	248.7	204.7	348.2	535.4	104.1	136.9	157.6	182.8	168.5	206.0	249.7	274.3	330.5	595.6
28	146.9	210.7	329.7	242.2	661.4	99.5	64.7	191.6	155.9	210.2	288.9	249.1	210.0	352.0	534.7	107.9	140.1	161.4	187.0	173.7	208.5	253.8	280.5	327.1	545.3
29	149.9	215.9	334.8	245.7	660.8	104.1	65.8	194.0	160.6	212.8	291.7	251.3	213.8	350.9	533.9	111.3	143.2	165.3	190.3	178.4	212.2	258.2	282.8	323.2	517.6
30	152.7	221.8	340.4	250.2	668.7	108.0	68.0	196.2	165.1	215.9	295.3	254.5	216.0	357.0	541.6	114.7	146.4	169.1	193.0	183.5	215.8	261.6	282.7	316.2	505.1

Table 18. Assembly No. 3, Thermocouple Temperatures for Wall No. 1 (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples (°C)																									
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
0	24.6	24.3	24.2	24.1	24.2	24.2	24.1	24.0	23.9	24.6	25.0	24.7	24.6	24.5	24.4	24.4	24.5	24.2	24.3	24.6	24.8	24.5	24.5	24.5	24.3	
1	25.7	24.8	25.1	25.4	25.5	26.3	26.5	27.7	35.6	68.8	27.3	26.5	27.8	27.8	27.0	27.1	28.6	27.2	67.8	225.8	28.8	29.9	30.1	32.0	29.3	
2	31.7	26.7	27.8	29.0	27.4	29.4	45.4	50.6	78.4	441.5	33.8	30.1	31.9	32.1	38.7	47.9	50.5	52.1	153.5	459.4	40.3	34.8	35.5	38.5	40.6	
3	43.4	31.5	35.5	47.2	49.4	49.0	75.5	73.3	106.9	445.6	42.6	38.7	42.7	46.4	66.3	74.9	68.5	54.8	232.9	514.9	41.3	39.4	43.4	48.3	51.1	
4	46.9	38.5	45.8	55.4	54.1	60.3	97.0	91.9	136.2	651.9	46.4	44.3	47.2	50.5	85.0	97.2	79.3	60.5	285.6	622.5	45.0	45.8	55.5	59.6	61.5	
5	50.0	44.3	49.5	60.7	56.6	73.0	132.1	126.5	196.5	661.6	50.7	48.9	51.5	57.7	104.3	123.9	93.2	68.2	334.9	640.7	49.8	52.3	68.1	70.2	70.5	
6	57.5	48.3	52.9	71.5	64.4	79.6	138.4	140.9	191.5	482.4	55.7	53.3	57.1	62.2	111.6	122.5	103.3	74.4	336.3	627.1	54.9	54.4	65.1	71.7	71.7	
7	57.5	52.9	57.1	75.9	70.6	93.2	169.4	162.1	242.7	621.2	58.9	57.2	61.1	69.1	139.8	150.5	110.0	80.7	396.8	702.0	58.1	60.3	84.0	84.8	78.9	
8	59.5	57.8	61.3	87.0	76.4	106.6	188.7	194.1	275.3	603.2	61.2	59.5	62.1	72.4	153.1	172.9	121.6	89.2	421.0	698.4	61.3	64.1	87.6	91.7	92.2	
9	60.8	57.7	61.5	95.9	78.4	115.9	208.1	225.9	309.1	585.2	63.4	61.7	63.1	75.6	166.4	195.2	133.1	97.6	445.1	710.1	66.3	66.3	96.4	106.5	99.6	
10	62.3	59.2	63.8	110.2	88.5	131.6	223.0	251.7	339.1	594.9	64.6	62.2	64.8	77.7	184.2	225.0	145.7	108.3	477.6	711.6	69.0	67.1	92.4	118.0	113.8	
11	63.2	61.0	64.1	122.0	102.6	146.2	243.0	275.1	358.1	614.0	65.8	63.4	70.1	78.8	202.3	263.3	157.8	117.0	502.2	765.6	71.0	67.1	96.9	133.8	120.1	
12	65.7	62.4	64.5	130.9	116.8	146.8	255.6	293.6	377.3	611.5	68.1	65.4	73.9	82.5	220.4	322.3	177.8	129.1	529.2	789.6	80.1	74.0	126.2	158.8	125.9	
13	68.8	64.3	66.4	129.8	142.1	147.3	248.4	291.4	370.7	617.0	73.9	66.9	78.2	84.3	236.3	350.1	238.1	155.7	541.3	809.2	94.0	82.1	152.0	173.2	132.9	
14	71.5	65.9	67.3	134.1	152.4	153.7	264.1	304.7	405.7	645.5	79.8	68.0	79.0	86.4	244.1	362.8	283.2	179.5	566.4	846.4	106.3	91.7	171.2	188.0	137.5	
15	74.2	66.8	68.0	136.9	157.9	160.1	281.3	326.6	420.8	640.5	85.4	68.5	79.6	88.2	254.5	374.4	330.8	213.6	573.1	845.2	121.1	105.7	185.1	202.2	141.8	
16	100.0	77.0	135.9	174.0	222.8	212.5	348.6	410.3	593.0	819.3	95.3	73.2	113.8	117.3	299.4	418.5	386.9	310.9	715.9	875.7	134.6	130.3	205.3	216.5	159.3	
17	130.4	124.0	217.3	229.4	339.2	322.9	479.3	591.2	694.8	825.0	114.4	101.4	211.7	185.1	366.5	482.7	635.1	710.7	854.8	833.9	169.7	166.7	238.3	257.6	256.0	
18	173.2	169.8	294.8	278.1	429.9	396.1	543.1	635.9	742.8	831.4	129.3	149.4	269.1	242.9	424.1	530.8	784.6	780.8	849.3	836.8	205.7	196.6	281.7	289.1	312.0	
19	211.0	219.8	369.7	322.0	492.2	466.3	591.0	669.7	768.4	824.3	147.8	198.7	310.9	290.5	469.4	569.3	802.2	791.4	837.1	823.6	237.0	221.7	312.9	314.4	335.5	
20	248.3	263.4	419.0	366.0	531.8	507.6	632.5	697.8	786.4	806.5	173.2	246.7	340.2	333.3	505.1	595.5	789.8	779.8	815.0	821.2	263.6	247.1	336.2	334.0	358.5	
21	277.7	298.4	442.7	395.6	540.3	531.1	664.6	717.2	790.6	803.2	199.0	276.6	344.0	361.1	526.5	605.3	783.9	770.1	802.5	817.8	282.0	271.0	347.8	351.6	372.9	
22	312.8	326.2	469.7	419.8	552.1	550.7	694.2	733.9	802.9	812.7	224.5	301.1	364.5	383.7	545.2	615.6	791.8	773.6	807.5	823.8	303.9	298.5	365.8	365.3	387.5	
23	338.2	356.2	481.5	439.1	556.5	566.8	714.2	742.3	805.6	823.3	249.1	320.2	384.4	405.7	561.9	623.8	790.5	766.8	803.7	822.3	322.2	325.0	380.8	379.4	401.8	
24	358.9	379.9	491.2	453.7	564.5	576.6	721.2	741.7	801.3	823.5	271.4	338.5	400.9	423.9	573.9	628.8	787.9	754.3	796.0	816.1	338.7	343.7	393.6	392.7	414.2	
25	375.6	395.8	498.4	462.7	567.0	580.3	720.2	739.2	793.4	823.4	291.4	354.3	407.4	437.5	580.7	631.2	782.4	746.9	786.8	813.9	350.2	358.8	405.6	403.2	425.8	
26	392.0	410.3	506.1	469.7	568.2	577.0	720.0	738.8	783.4	832.3	310.2	374.3	423.2	448.5	585.8	629.1	771.4	747.3	774.1	813.5	361.5	372.7	413.0	413.2	437.7	
27	406.6	422.4	512.3	475.8	569.6	579.5	718.4	734.6	774.1	827.2	327.0	386.6	431.7	458.0	590.5	629.3	762.1	742.3	765.1	807.8	372.6	383.7	420.2	423.4	449.7	
28	417.8	431.9	517.7	477.9	571.3	580.4	714.5	729.3	764.3	822.9	341.9	394.9	433.2	465.2	594.4	630.4	754.0	737.2	757.5	802.3	382.8	394.8	427.1	433.5	460.2	
29	425.7	439.0	521.2	483.5	571.8	583.1	709.8	723.2	757.7	819.8	354.5	404.1	435.7	473.2	598.4	631.0	751.7	728.8	753.8	797.4	392.6	404.0	432.1	441.3	469.9	
30	432.8	448.4	526.4	489.2	574.6	588.1	714.2	724.9	756.7	825.9	366.4	412.6	441.9	481.9	603.1	634.6	748.9	729.5	752.7	799.1	399.6	414.6	437.6	449.9	477.3	

	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	
0	24.5	24.3	24.3	24.1	***	24.4	24.4	24.5	24.3	24.5	24.4	24.2	24.1	23.9	23.9	24.6	24.5	24.6	24.4	24.6	24.4	***	24.3	24.2	
1	28.7	28.7	31.4	96.9	***	34.1	40.4	38.3	41.2	34.6	34.2	35.8	62.9	113.5	185.2	35.4	40.4	71.4	42.6	65.9	56.7	***	68.6	116.0	
2	39.0	46.0	54.6	181.9	***	45.4	48.1	45.7	47.0	42.4	55.8	60.5	120.2	227.3	345.5	51.2	55.5	90.1	56.8	102.3	87.3	***	99.7	185.5	
3	48.2	61.7	82.0	261.4	***	49.7	50.0	47.5	54.2	50.4	70.8	96.9	235.1	333.0	500.4	76.2	85.3	137.6	72.2	138.4	147.2	***	183.0	297.7	
4	55.1	68.2	91.4	324.3	***	49.3	50.5	52.6	63.7	64.4	91.9	138.5	300.7	381.6	557.4	79.0	84.4	142.4	85.0	168.3	172.8	***	219.0	320.8	
5	63.9	75.3	117.5	380.6	***	52.5	58.8	62.8	70.4	68.4	107.4	194.3	349.0	428.5	599.3	95.1	89.3	149.3	103.2	209.4	207.8	***	274.0	372.4	
6	66.3	79.2	137.5	395.0	***	56.9	60.7	63.9	73.4	71.3	135.8	247.4	384.1	461.2	612.2	123.8	114.8	190.0	132.9	222.1	236.5	***	321.0	406.1	
7	71.0	81.7	150.4	451.5	***	59.2	63.9	69.6	79.3	78.1	158.3	278.2	413.8	518.3	701.8	126.3	114.1	180.2	147.6	235.1	262.8	***	367.0	477.0	
8	79.9	86.9	185.7	483.7	***	61.8	69.6	74.3	86.8	89.4	206.9	333.0	452.9	554.8	715.6	131.5	121.7	198.9	172.8	246.7	288.8	***	402.0	512.1	
9	85.9	93.3	212.6	522.9	***	64.8	75.3	89.0	95.7	111.7	249.1	385.3	484.5	598.7	744.6	144.5	137.2	221.7	195.5	263.4	318.0	***	434.0	551.6	
10	92.3	100.4	236.6	531.1	***	66.5	84.1	109.1	115.7	144.0	280.6	417.0	504.6	611.7	723.3	156.4	151.1	238.8	213.4	286.1	343.9	***	459.0	557.0	
11	98.1	109.1	245.2	550.4	***	68.9	89.1	122.8	135.2	171.2	305.0	427.9	516.9	624.1	732.3	167.6	165.5	256.1	226.7	304.6	358.7	***	473.0	577.4	
12	106.2	115.1	273.3	577.5	***	75.0	107.7	161.2	167.8	211.6	355.4	455.8	541.3	651.6	746.8	188.4	185.5	273.1	239.9	320.0	381.4	***	495.0	613.7	
13	112.3	123.2	298.6	600.5	***	88.2	133.4	185.6	194.4	245.9	389.6	481.7	554.8	681.0	776.1	209.7	210.8	296.3	250.8	339.3	400.7	***	505.0	654.5	
14	119.3	132.4	323.7	619.0	***	102.8	153.6	198.8	224.0	279.7	415.9	499.1	564.9	684.8	765.7	226.1	234.3	312.1	265.0	360.8	419.0	***	518.0	664.1	
15	123.7	142.2	343.3	627.2	***	116.9	168.2	208.7	246.5	301.5	427.2	509.5	571.6	692.9	777.3	239.0	251.5	321.2	277.9	375.5	426.3	***	522.0	683.5	
16	168.7	216.6	499.4	745.9	***	140.9	199.4	262.8	299.6	360.2	482.1	551.3	643.1	840.6	833.2	247.0	268.9	356.7	315.6	443.2	479.5	***	601.0	848.3	
17	244.7	710.9	777.5	823.5	***	163.9	250.4	315.4	377.2	439.8	573.3	748.9	816.0	830.8	857.3	284.7	301.0	399.3	377.2	528.0	545.1	***	772.0	860.8	
18	304.4	798.6	796.9	820.3	***	186.6	291.4	359.6	430.6	486.4	610.5	805.4	826.1	824.5	845.5	322.6	343.5	439.9	429.4	569.4	586.3	***	812.0	850.5	
19	347.5	800.6	795.2	815.3	***	210.6	330.8	393.4	466.7	516.0	628.2	804.6	817.3	817.8	824.9	358.9	381.3	467.8	462.0	602.1	601.9	***	807.0	839.5	
20	377.1	789.3	784.8	794.0	***	237.7	364.4	432.1	490.0	531.2	638.1	789.9	797.3	600.7	804.9	382.0	409.7	491.7	491.9	608.2	619.4	***	791.0	814.5	
21	400.6	781.2	778.1	779.0	***	261.3	385.6	444.7	501.5	539.0	636.0	780.9	784.3	791.9	793.8	391.9	427.7	501.1	508.6	610.8	614.7	***	781.0	804.9	
22	423.0	784.6	781.2	780.7	***	286.1	403.0	459.1	509.7	544.1	639.6	785.8	787.3	798.6	797.3	407.6	444.9	512.9	520.5	613.6	617.4	***	783.0	811.7	
23	441.0	778.7	772.6	771.4	***	309.0	416.7	471.7	517.1	549.1	644.3	780.5	777.4	796.9	792.8	419.8	457.8	521.1	530.2	615.5	618.9	***	776.0	810.3	
24	454.6	766.0	760.3	758.3	***	326.0	429.6	481.4	524.9	554.2	649.3	768.5	764.0	789.3	779.5	431.3	463.1	528.7	539.2	614.1	619.5	***	764.0	804.6	
25	466.6	756.0	750.9	749.2	***	342.7	440.6	490.6	531.8	560.3	653.5	758.9	754.3	781.2	772.0	441.7	471.7	532.3	545.9	611.5	617.4	***	757.0	797.8	
26	477.6	751.3	744.4	743.1	***	356.1	453.0	497.5	536.2	565.6	655.7	750.9	747.2	769.8	771.3	450.0	479.8	533.0	552.0	609.6	619.1	***	754.0	782.4	
27	489.6	746.0	738.5	739.1	***	373.0	459.5	504.7	542.7	564.2	659.0	744.8	741.6	761.4	765.8	459.1	486.7	535.2	557.3	610.7	621.1	***	750.0	773.4	
28	501.9	739.8	731.6	734.1	***	386.4	467.0	508.9	545.4	566.3	660.3	738.8	735.0	754.0	760.3	465.8	489.4	536.1	557.5	609.0	620.5	***	745.0	764.2	
29	512.9	733.8	725.0	729.3	***	395.3	469.0	514.0	547.2	569.1	660.2	734.7	729.8	750.2	753.8	470.9	492.4	535.2	560.5	607.5	621.2	***	739.0	761.3	
30	521.2	734.1	723.8	729.4	***	405.1	472.6	516.6	549.0	572.6	659.5	734.7	729.0	749.0	755.6	474.3	495.0	531.9	561.4	605.0	622.7	***	741.0	758.4	

Table 19. Assembly No. 3, Thermocouple Temperatures for Wall No. 2 (Contract No. A1042)

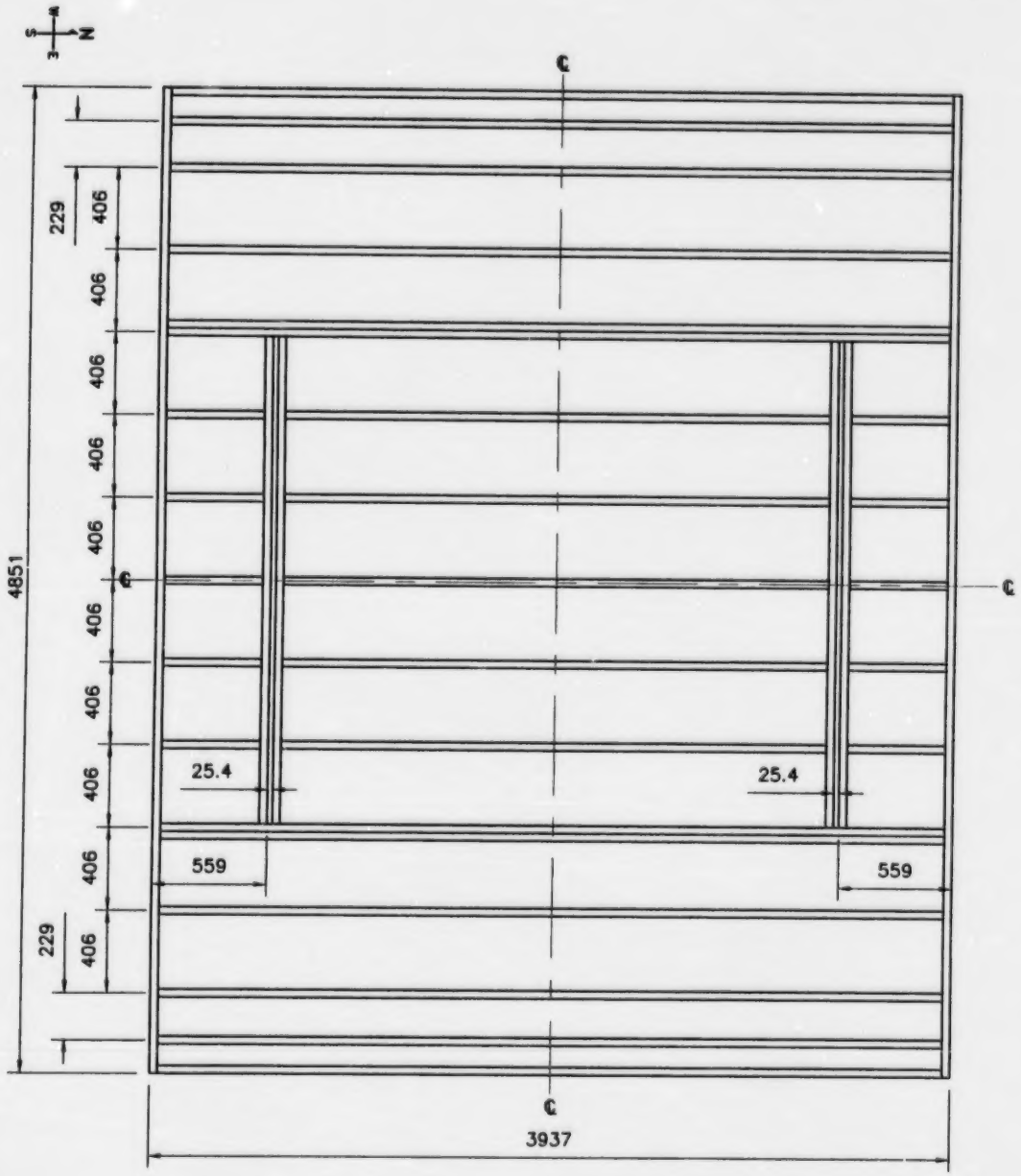
TIME	Temperatures Measured at Wall Thermocouples (°C)																									*** denotes a faulty thermocouple
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
0	25.0	24.8	24.8	24.8	24.7	24.9	24.6	24.8	24.2	25.1	25.3	25.1	25.0	24.8	24.7	24.7	25.0	24.8	24.8	24.7	25.1	24.8	24.6	24.6	24.5	
1	37.5	36.7	40.3	39.1	34.2	41.7	41.0	45.5	56.2	150.5	43.3	44.2	58.8	47.4	39.4	44.3	50.9	62.3	193.5	361.7	65.1	78.9	84.4	86.1	80.0	
2	52.9	46.1	50.3	50.4	43.3	50.3	50.3	52.2	70.9	195.6	88.2	73.9	104.5	71.8	54.8	63.1	74.6	104.4	277.4	544.9	124.1	136.0	145.4	185.9	185.9	
3	66.5	57.3	68.9	65.0	54.6	63.6	61.8	64.3	115.0	358.3	128.9	108.4	162.8	103.6	85.0	106.7	143.7	265.1	488.8	848.5	182.9	233.1	217.5	275.1	350.3	
4	75.8	86.8	118.5	103.4	70.6	80.1	80.9	98.5	232.7	536.1	167.4	193.0	273.9	237.6	198.4	235.6	281.5	440.6	606.7	892.0	228.6	251.6	213.4	285.5	380.4	
5	84.4	91.0	136.7	139.6	87.5	93.1	103.9	138.4	289.5	568.7	220.0	257.6	330.9	302.2	280.7	329.9	393.6	542.1	644.0	872.0	248.0	271.0	237.6	325.7	428.3	
6	102.0	123.0	171.1	164.9	109.5	143.0	171.7	247.0	370.5	605.8	248.9	273.1	337.6	348.5	361.0	431.7	497.3	602.7	695.6	864.8	323.2	369.7	283.7	323.8	438.5	
7	116.6	159.2	216.9	210.9	148.2	217.7	251.8	345.4	453.5	661.7	253.2	287.0	348.7	391.9	428.5	503.4	589.4	689.1	758.1	816.2	371.9	423.9	324.9	332.7	444.6	
8	123.4	180.0	246.4	249.8	217.3	294.5	332.4	396.5	466.1	633.7	262.2	294.5	365.3	424.6	482.6	551.2	651.7	732.7	762.5	785.8	407.5	475.9	379.3	354.7	457.7	
9	126.9	185.8	262.1	281.6	290.4	358.9	396.1	443.7	530.9	693.3	270.1	307.3	378.5	453.2	511.3	586.6	702.2	784.3	793.8	806.4	426.4	510.3	445.8	408.4	503.3	
10	128.3	188.5	274.7	310.1	344.0	403.3	436.9	450.2	519.2	691.5	278.0	318.9	394.3	476.9	528.7	608.8	706.1	779.5	778.3	782.2	439.8	526.4	486.0	469.3	543.2	
11	129.4	179.3	273.4	331.5	379.7	425.4	462.1	452.7	538.2	717.0	280.8	328.0	406.8	489.9	539.6	620.4	715.6	782.6	781.1	785.8	444.6	533.2	509.9	505.1	576.9	
12	130.3	184.4	281.6	350.5	410.1	453.9	482.4	460.2	554.7	723.0	282.4	334.9	418.7	503.5	552.1	630.6	719.3	777.7	776.3	780.1	455.7	541.8	525.3	532.5	603.6	
13	133.3	181.3	282.3	366.8	428.9	472.7	494.6	463.5	591.2	742.5	283.9	342.1	428.2	510.5	560.0	635.0	724.6	782.6	782.9	788.9	462.8	545.5	530.6	549.8	622.2	
14	138.8	187.0	285.4	376.6	446.6	483.8	505.6	463.4	553.5	708.6	284.1	347.0	436.7	518.8	567.2	636.0	704.1	752.2	753.3	753.9	468.8	547.3	534.4	559.2	631.3	
15	144.9	196.7	298.8	390.1	455.3	493.3	510.1	466.9	587.7	734.1	287.0	353.1	445.5	523.4	570.3	634.7	706.2	759.6	757.0	763.9	472.0	546.8	536.7	561.2	634.4	
16	239.7	313.3	442.3	473.5	563.0	617.3	680.7	717.9	793.3	860.8	365.5	440.3	525.2	592.3	651.4	808.1	942.9	964.8	938.8	956.1	514.7	593.5	574.3	646.2	757.9	
17	372.7	456.0	549.6	582.6	631.4	706.5	855.3	834.9	878.1	905.8	479.1	521.7	593.3	710.4	760.5	863.8	877.5	892.9	886.4	903.1	585.7	637.5	630.7	779.7	804.6	
18	449.1	529.6	591.7	618.7	664.7	759.3	901.3	881.1	923.3	927.1	523.7	553.0	644.7	746.5	768.4	897.2	905.5	923.8	898.6	917.7	624.2	665.0	655.4	778.7	787.7	
19	493.9	557.2	593.0	624.6	694.4	786.9	912.0	885.9	927.4	927.2	542.9	588.6	653.9	692.5	709.7	915.5	912.0	930.9	899.1	915.2	640.8	674.2	662.5	722.0	730.0	
20	484.9	553.3	584.8	623.3	706.2	787.8	913.1	879.4	924.2	929.3	543.7	580.6	634.8	690.2	708.6	915.1	912.3	933.0	900.4	912.6	640.9	663.6	657.0	723.9	732.4	
21	505.3	566.0	598.3	638.8	707.3	778.6	886.6	857.0	906.9	913.3	552.5	589.8	648.8	702.4	718.0	888.0	883.9	909.1	876.4	885.5	638.7	658.6	651.4	727.8	734.4	
22	514.0	579.2	614.0	655.4	716.6	782.2	886.1	857.0	907.5	916.1	564.9	602.4	681.6	715.9	729.3	887.2	885.5	904.1	879.7	891.1	644.0	664.6	655.0	737.6	742.6	
23	525.5	592.5	630.1	672.2	728.2	787.0	876.6	850.5	890.3	907.8	581.9	618.5	701.6	728.6	740.2	878.8	877.0	882.4	870.6	881.5	651.6	677.2	661.4	746.7	750.6	
24	543.0	604.3	641.7	689.1	741.6	795.0	872.7	873.2	894.9	898.3	596.7	629.4	709.2	739.3	749.9	873.9	870.4	891.4	868.3	877.1	661.7	689.8	667.9	755.9	759.2	
25	559.8	613.0	650.8	702.2	752.0	799.5	878.9	888.8	906.5	908.0	614.6	645.9	716.8	748.7	758.2	880.0	877.9	903.1	881.7	887.6	675.2	701.2	678.1	764.0	765.7	
26	565.4	619.6	652.4	710.2	753.3	796.8	873.6	886.9	906.5	906.7	630.7	655.7	720.2	750.5	759.9	876.0	875.0	902.5	880.3	885.1	686.5	708.7	688.5	765.3	765.3	
27	579.7	628.0	656.5	723.1	764.6	806.5	881.2	883.0	901.2	902.7	643.8	664.4	723.5	759.1	767.6	881.1	877.7	890.9	882.5	884.9	695.6	715.9	697.4	773.6	773.1	
28	592.5	634.7	659.4	730.1	765.6	805.0	877.7	875.3	893.0	900.7	656.9	669.7	729.0	761.4	769.4	881.3	878.6	884.6	882.9	884.4	703.2	721.4	705.0	775.7	774.3	
29	597.2	637.4	655.4	733.1	762.2	798.8	881.4	885.4	902.7	902.9	664.1	676.5	729.0	759.3	766.8	882.7	881.9	894.5	887.3	887.7	705.0	720.6	706.7	772.5	770.9	
30	598.6	637.1	649.2	730.4	754.2	784.8	872.3	888.3	900.7	900.0	671.7	683.0	727.5	753.4	760.6	878.9	879.0	897.4	884.5	883.9	706.0	720.2	708.0	765.8	763.1	
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
0	24.8	24.5	24.7	24.3	24.6	25.1	24.9	24.9	25.0	24.6	24.6	24.6	24.7	24.3	24.3	***	24.8	24.6	24.6	24.7	24.5	24.3	24.4	24.2	24.6	
1	180.1	93.7	148.2	164.8	314.2	53.2	58.2	84.5	97.3	87.4	89.6	121.5	134.1	175.2	248.6	***	55.1	59.0	49.9	59.1	37.9	52.9	66.5	67.9	189.6	
2	292.1	206.4	301.0	286.9	527.4	81.1	93.8	136.5	170.6	146.1	150.2	199.1	246.4	325.6	436.0	***	76.6	83.6	75.0	82.0	54.8	81.3	140.1	129.3	322.0	
3	475.3	397.0	538.7	472.7	680.3	124.7	133.4	171.7	202.3	182.8	238.8	268.8	429.2	480.7	804.9	***	91.8	85.3	81.4	89.4	72.2	130.7	310.3	313.9	518.5	
4	500.4	481.8	649.6	591.4	768.0	135.8	127.0	140.7	160.4	155.3	233.3	363.2	636.8	612.4	842.4	***	84.3	80.5	82.3	106.1	95.4	178.8	554.0	545.8	679.3	
5	536.6	543.9	677.5	649.8	745.9	132.6	125.9	143.0	168.4	174.3	270.2	510.5	719.2	699.6	775.8	***	82.7	82.6	97.6	170.5	122.7	227.8	664.0	671.4	716.0	
6	548.5	595.4	701.6	712.3	769.9	180.3	139.1	146.0	156.3	156.7	232.6	643.1	743.1	744.4	769.2	***	91.1	87.0	94.2	119.5	125.2	264.3	711.4	728.8	735.3	
7	560.8	675.0	755.0	775.2	807.6	201.2	151.1	153.1	147.6	148.3	214.3	758.2	790.1	800.1	800.6	***	97.8	92.2	98.8	120.6	126.2	444.5	785.1	796.5	784.1	
8	564.0	729.0	760.8	777.3	793.8	247.5	169.1	167.3	150.1	143.8	207.9	768.4	779.9	788.5	787.8	***	104.9	98.6	106.5	122.0	135.2	605.0	787.6	787.1	779.0	
9	581.4	767.3	788.1	799.3	819.4	292.4	207.1	200.2	160.5	145.9	222.5	797.6	804.2	819.9	815.9	***	118.6	115.1	117.4	133.3	160.5	701.6	818.6	808.3	805.0	
10	596.8	761.9	765.1	778.0	792.0	329.8	251.7	244.8	178.8	155.6	260.6	776.1	789.3	803.0	799.3	***	150.0	130.3	133.1	150.3	207.5	722.7	799.2	788.8	788.3	
11	603.9	763.1	766.4	778.8	796.5	360.1	288.8	284.3	213.9	173.3	305.4	779.1	794.0	808.3	801.8	***	175.2	146.6	152.8	174.4	259.5	734.1	801.3	791.6	794.5	
12	618.2	755.8	758.6	770.3	785.8	381.0	321.1	316.5	259.9	202.1	361.9	770.8	789.3	800.0	793.5	***	209.4	168.5	173.8	208.7	318.6	735.7	791.8	786.3	787.9	
13	626.0	756.0	764.5	775.6	795.9	393.9	338.7	344.6	314.8	246.3	418.9	777.9	799.6	811.5	801.0	***	226.9	203.7	200.9	246.2	364.7	738.3	798.7	793.8	794.4	
14	630.7	730.9	733.4	743.2	759.3	405.7	355.3	363.5	363.2	293.2	464.9	744.7	770.5	778.9	773.8	***	237.6	240.3	228.6	279.3	402.1	722.7	768.9	767.1	768.4	
15	631.3	730.7	736.8	747.7	765.6	412.4	365.6	381.6	401.6	331.2	493.9	749.4	777.0	785.8	774.4	***	254.3	270.6	252.9	304.8	425.5	720.5	773.6	769.2	772.0	
16	750.3	952.6	953.5	950.3	982.0	413.4	402.2	447.9	577.7	509.3	748.6	958.6	947.9	953.3	909.4	***	338.2	317.5	491.3	621.5	672.1	926.1	975.8	944.2	957.7	
17	800.2	860.8	901.2	893.4	883.1	502.4	518.2	579.4	771.0	772.3	798.7	886.9	899.0	901.7	917.4	***	502.3	534.2	771.3	792.6	796.9	872.8	899.3	901.9	891.1	
18	787.7	888.1	928.5	914.9	909.6	576.8	594.2	641.7	774.0	778.6	782.6	906.4	931.0	933.0	938.4	***	601.6	637.2	779.0	790.7	783.4	900.1	928.7	932.3	913.2	
19	722.6	882.6	928.3	914.0	908.5	609.1	630.1	666.6	731.8	721.2	741.9	908.2	936.8	937.6	937.2	***	642.0	665.9	712.5	721.2	725.2	892.7	926.7	929.1	916.9	
20	725.6	872.5	919.5	912.7	898.6	618.4	635.5	664.5	733.8	718.1	745.2	912.1	938.7	939.5	939.2	***	642.4	662.2	714.1	717.1	730.4	887.7	926.1	927.2	923.6	
21	730.1	847.8	892.9	887.9	869.9	621.5	642.6	664.9	735.5	723.2	743.7	889.1	919.6	919.6	918.8	***	646.6	665.1	719.1	723.5	732.8	864.8	903.0	906.0	905.5	
22	739.5	854.2	895.0	892.7	872.6	632.5	657.9	675.2	744.4	733.6	751.1	894.8	921.1	920.9	920.5	***	658.1	677.2	729.2	735.1	742.4	872.8	904.8	907.8	908.8	
23	747.9	852.2	883.9	884.6	864.1	643.8	675.3	686.0	753.0	743.0	758.0	886.1	901.2	901.2	907.8	***	668.2	689.9	738.1	744.3	750.3	870.5	893.1	896.5	895.3	
24	755.9	861.5	886.6	884.6	876.7	657.2	689.6	697.1	762.7	752.0	766.8	883.2	906.4	909.0	897.7	***	680.5	701.0	746.9	752.7	758.8	875.3	896.0	897.2	894.5	
25	762.9	874.9	897.1	898.0	892.6	671.9	701.6	706.8	771.0	759.9	773.9	895.9	918.1	920.3	911.4	***	692.9	710.8	753.9	760.0	765.8	890.9	908.5	911.5	908.8	
26	763.5	873.7	894.1	894.7	891.7	683.2	709.2	713.2	771.4	761.3	773.0	892.5	918.1	919.2	909.7	***	702.0	715.7	754.1	761.0	765.5	888.7	906.5	910.6	906.7	
27	770.8	874.9	891.5	892.9	886.6	694.0	716.0	719.1	780.7	769.5	781.3	889.5	902.8	900.8	893.2	***	709.1	720.3	762.0	768.3	773.0	886.5	896.6	898.0	894.2	
28	772.2	874.8	887.4	891.2	883.2	702.3	721.0	724.2	782.8	771.6	782.7	890.4	898.8	898.2	895.3	***	715.5	723.8	764.1	770.4	774.6	886.0	894.3	896.7	894.4	
29	769.1	882.8	896.4	896.7	892.3	703.9	720.3	723.5	778.9	769.0	778.4	894.8	907.4	906.7	899.4	***	715.5	721.9	761.3	767.5	770.9	892.3	900.7	901.8	899.2	
30	762.0	883.7	899.4	894.7	895.1	705.3	720.1	723.4	770.2	763.0	770.0	891.6	909.5	908.7	898.7	***	715.1	720.4	755.0	762.1	763.4	893.6	901.7	901.5	898.3	

Table 20. Assembly No. 3, Thermocouple Temperatures for Wall No. 3 (Contract No. A1042)

TIME	Temperatures Measured at Wall Thermocouples (°C)																								*** denotes a faulty thermocouple
(min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
0	26.4	26.3	26.4	26.4	25.9	26.1	26.1	25.9	24.9	25.7	26.5	26.4	26.5	26.3	26.4	26.4	26.3	26.3	25.2	26.2	26.4	26.4	26.5	26.1	26.1
1	26.8	27.1	28.1	29.1	27.9	30.1	30.3	30.6	26.9	88.2	27.1	27.4	28.3	27.7	29.5	30.3	35.5	40.3	28.8	101.1	27.9	28.3	31.0	28.8	29.0
2	26.8	27.0	27.8	28.5	28.1	30.2	32.4	31.6	27.5	93.7	27.1	27.4	28.2	27.8	29.8	31.1	34.6	39.7	29.9	150.7	27.7	28.0	29.1	28.4	28.8
3	27.4	27.5	28.8	29.4	28.5	31.2	31.9	36.1	28.6	133.7	27.5	28.4	30.7	31.6	35.8	38.2	44.3	51.4	37.0	175.7	28.8	30.0	33.6	31.6	32.0
4	27.4	27.5	28.7	29.8	28.4	31.0	31.8	36.7	29.3	145.4	27.6	28.6	31.4	30.1	33.3	36.0	40.8	48.8	38.2	222.3	28.7	29.9	32.8	30.5	32.5
5	28.9	28.9	31.8	32.4	28.8	30.9	31.7	34.9	29.6	171.8	30.0	31.8	34.2	31.3	32.7	35.8	40.2	49.7	46.5	349.4	33.3	34.7	39.1	34.8	38.4
6	28.3	28.7	30.2	30.8	28.6	30.6	31.0	33.3	35.6	181.6	31.2	32.4	34.1	31.9	33.1	35.3	38.0	45.5	58.0	227.4	35.1	35.8	39.7	36.6	40.5
7	29.4	29.4	30.5	31.9	29.1	30.8	31.9	35.5	38.8	184.7	31.4	32.2	34.6	32.1	33.2	36.0	39.7	50.7	58.1	330.1	37.6	36.9	39.8	36.8	41.5
8	30.8	30.5	31.3	31.9	29.3	30.8	31.8	35.2	50.1	203.1	32.0	33.0	35.0	32.6	33.1	35.7	38.8	53.3	70.1	379.0	38.2	37.1	39.9	37.6	42.4
9	32.6	32.1	32.5	32.8	30.0	31.0	32.4	34.7	57.5	218.8	33.0	33.9	35.9	33.1	33.5	35.9	39.3	56.4	81.0	409.0	39.5	38.3	41.6	39.0	43.8
10	35.1	34.3	35.6	35.8	31.9	33.5	35.2	44.8	61.1	249.6	37.6	38.2	39.2	35.3	36.5	40.6	52.2	75.9	92.0	452.8	43.1	43.3	50.6	43.0	52.0
11	38.0	36.8	37.3	37.6	33.5	35.3	36.3	45.1	73.2	272.9	39.9	39.9	40.1	36.9	37.2	40.9	50.4	83.8	106.5	447.5	47.6	48.2	57.4	49.8	61.8
12	39.9	38.8	39.4	39.9	35.3	37.4	38.5	51.9	74.3	284.0	42.6	42.5	42.4	38.4	39.8	44.0	60.7	105.9	117.4	482.6	53.5	55.2	69.3	56.5	71.8
13	42.1	41.2	41.7	42.4	36.9	39.2	40.8	56.5	81.9	292.8	44.8	45.6	47.2	40.5	43.0	47.1	68.5	122.3	133.0	483.9	60.4	63.8	84.2	67.2	87.2
14	44.5	43.7	44.3	44.8	40.0	42.3	43.5	76.7	83.1	306.5	49.6	49.9	48.0	42.7	47.9	53.2	96.1	160.5	144.6	511.8	73.1	78.3	105.2	79.9	105.2
15	46.7	46.1	46.3	47.7	43.6	45.7	46.3	87.7	83.9	320.1	52.8	53.8	51.4	46.0	55.1	60.6	114.4	184.0	155.1	513.0	90.7	98.0	124.8	93.1	123.1
16	43.6	43.7	44.7	49.5	42.7	45.5	45.3	104.4	85.4	330.3	53.4	55.3	53.4	47.7	59.6	67.2	119.8	202.9	162.6	519.2	108.1	114.1	141.1	103.3	140.4
17	38.6	39.5	43.8	51.3	41.2	43.6	42.5	129.2	89.6	340.7	52.4	54.7	55.2	47.2	61.9	73.0	130.5	230.8	172.1	542.5	118.8	125.0	154.2	112.6	156.6
18	34.6	36.6	38.9	46.3	40.2	42.2	41.4	130.5	94.6	349.5	52.2	53.6	54.0	48.0	62.7	74.1	117.5	232.1	183.3	544.2	116.7	121.4	148.5	114.8	164.9
19	34.3	35.8	38.3	44.5	39.6	41.9	41.2	142.4	101.8	358.5	51.5	52.4	52.6	49.3	62.5	75.1	122.2	246.6	194.5	562.0	112.0	117.0	140.7	113.1	166.9
20	35.4	35.9	38.6	44.5	39.5	41.6	41.1	152.5	110.5	372.0	50.9	51.6	52.1	50.2	63.4	76.0	124.8	258.0	208.0	574.0	106.4	111.7	133.7	110.0	165.0
21	36.0	36.6	38.2	40.2	38.0	40.6	40.7	111.7	114.0	363.7	51.1	51.9	52.1	50.1	57.6	68.2	85.3	173.9	211.5	528.3	100.6	104.2	118.0	99.7	149.7
22	37.9	37.5	38.9	40.3	37.2	40.1	40.7	116.4	118.3	359.1	51.7	52.0	52.4	49.5	57.6	68.1	94.3	192.3	218.4	559.2	96.0	99.7	110.3	93.0	137.9
23	38.3	37.7	38.4	39.0	36.3	39.7	40.8	117.9	125.0	371.9	52.3	52.6	52.9	49.3	55.8	66.0	93.1	202.8	227.9	571.6	92.6	95.4	103.4	88.1	129.8
24	40.4	39.1	40.0	40.5	36.0	39.3	40.2	125.2	135.2	387.2	53.3	53.7	53.3	49.1	55.1	66.6	98.7	212.5	241.0	580.5	90.5	92.7	100.2	85.4	125.3
25	41.0	39.6	39.9	39.4	35.6	39.1	39.7	121.4	143.6	394.9	54.1	54.3	53.9	49.4	52.7	65.0	90.7	207.1	249.6	590.1	88.2	89.6	94.3	80.7	117.6
26	42.3	40.5	40.9	40.3	35.4	38.6	39.4	114.3	149.8	398.2	54.6	54.6	54.1	49.5	51.3	63.2	84.4	201.8	258.3	590.1	85.9	86.7	90.4	76.4	110.8
27	43.1	41.1	41.2	40.5	35.4	38.4	39.3	117.7	156.2	404.7	54.8	54.7	54.2	49.6	49.9	60.2	86.9	208.6	267.9	600.2	83.4	83.7	86.1	72.9	105.2
28	43.0	41.0	40.6	39.3	35.1	38.2	39.4	117.5	162.9	408.6	54.7	54.6	54.1	49.5	49.1	57.9	86.3	211.2	277.5	607.6	80.9	80.8	82.2	69.9	99.9
29	43.0	40.9	40.3	38.9	34.9	37.8	39.0	112.1	169.5	413.1	54.7	54.6	54.2	49.7	48.8	56.3	76.7	203.9	285.0	598.8	78.7	78.6	79.7	67.4	93.1
30	42.7	40.4	39.7	38.2	34.5	37.4	38.8	109.2	176.0	415.1	54.5	54.4	54.0	49.6	48.0	53.7	75.1	198.7	291.1	601.9	76.5	76.1	76.6	64.9	90.5

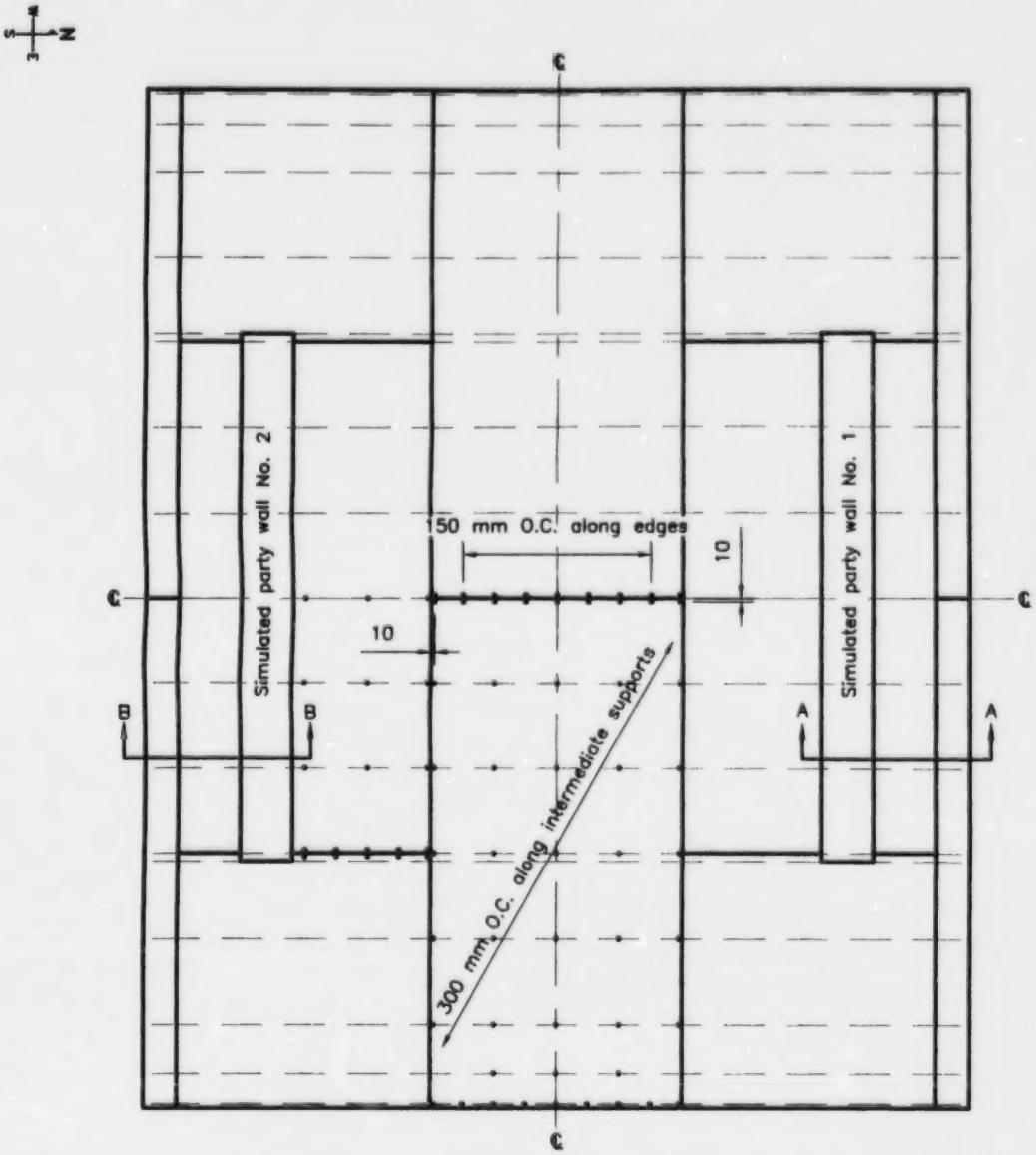
	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
0	26.2	26.2	25.9	24.5	26.2	26.1	26.4	26.5	26.2	26.3	26.4	26.2	26.1	24.7	26.3	26.4	26.3	26.0	26.1	26.1	26.0	25.9	25.9	24.5
1	30.5	33.3	30.3	26.5	103.7	26.6	28.5	29.4	28.1	28.8	29.3	28.8	32.0	27.7	80.0	27.3	27.3	27.1	28.8	30.6	31.5	35.2	37.3	26.8
2	29.8	32.4	31.2	27.3	106.6	26.6	27.5	27.7	27.7	28.1	29.0	28.9	31.5	28.5	79.2	27.2	27.2	27.0	27.9	28.5	29.7	31.8	33.7	27.3
3	33.4	35.5	32.3	30.9	115.2	28.2	30.8	31.6	28.9	29.4	30.8	29.1	31.5	28.8	84.7	27.3	27.4	27.3	28.2	28.8	29.7	31.1	32.8	27.2
4	42.6	55.8	37.2	34.9	119.0	27.3	29.6	32.6	33.0	33.3	39.4	31.1	34.6	29.6	133.3	27.3	27.6	28.2	30.6	34.9	33.2	32.4	33.2	27.6
5	54.8	82.4	51.0	50.0	166.0	28.4	31.9	38.6	41.3	44.1	46.2	36.0	44.9	33.5	195.4	27.9	28.4	30.3	33.5	34.7	34.0	32.9	34.4	28.2
6	50.0	52.8	52.4	57.5	190.2	32.3	34.5	39.5	40.8	42.5	40.6	36.5	46.8	37.9	176.3	28.7	29.3	30.2	32.7	32.7	32.3	32.0	33.8	28.2
7	55.6	84.3	62.1	63.4	198.3	32.7	39.3	49.5	50.9	54.5	61.4	42.3	54.5	42.6	186.7	30.4	34.3	34.7	38.1	40.4	35.4	34.1	34.9	29.4
8	54.8	72.0	73.9	74.1	222.6	37.0	46.6	57.7	57.7	64.9	72.8	47.6	60.7	51.8	201.3	33.8	39.4	38.2	41.3	39.9	37.8	35.0	36.4	31.1
9	59.7	96.6	84.3	83.2	238.6	42.4	55.2	66.1	67.2	71.7	74.2	53.5	69.4	68.4	215.4	35.6	40.3	39.0	39.7	39.2	36.9	33.9	36.8	43.3
10	80.1	123.8	91.0	90.4	258.1	45.8	60.6	71.4	72.4	74.5	67.2	54.4	77.7	78.3	237.4	38.4	42.5	41.6	41.6	41.7	39.0	37.4	38.3	54.2
11	90.0	132.4	99.1	99.3	272.8	51.0	66.1	76.4	77.0	76.2	71.1	55.1	87.1	88.5	256.0	39.7	42.3	41.8	41.4	42.6	40.2	39.0	40.5	61.9
12	107.9	153.1	108.3	96.6	285.9	54.9	70.8	76.5	76.5	76.4	71.1	61.7	110.1	104.2	337.9	41.2	42.8	42.4	42.4	43.8	42.5	42.4	51.1	58.4
13	127.1	159.7	115.0	110.0	293.7	61.1	74.8	76.6	73.5	72.1	65.5	63.0	120.2	112.7	344.9	43.1	43.5	43.0	43.8	44.9	42.9	42.9	48.0	54.3
14	146.0	177.9	122.9	117.8	304.0	66.0	74.9	75.0	71.2	69.7	72.5	72.0	150.8	117.1	367.6	45.5	44.7	43.9	45.2	46.7	45.1	45.4	54.9	67.7
15	163.8	197.3	134.6	124.6	309.5	71.1	74.2	70.2	66.4	65.6	68.3	75.4	169.1	128.6	375.0	47.2	46.2	45.1	46.2	46.5	45.6	45.4	52.1	71.9
16	177.6	200.0	147.2	132.5	313.0	74.1	75.2	70.2	66.4	67.5	81.2	86.0	192.9	134.6	381.1	47.0	46.2	45.1	46.0	47.1	46.6	49.0	70.3	63.7
17	195.4	203.6	157.2	136.3	319.9	83.3	86.1	80.4	78.2	82.7	115.2	116.1	230.5	140.6	393.7	46.5	46.6	45.3	45.8	47.2	48.5	51.3	87.3	67.8
18	207.9	232.6	165.3	142.1	324.2	103.9	120.5	121.3	122.8	124.6	152.2	158.0	256.4	141.3	398.8	51.4	53.4	49.7	49.9	50.8	52.9	53.1	108.9	75.1
19	213.3	259.8	172.4	147.1	330.6	123.1	152.7	158.1	169.2	169.4	197.2	200.1	273.5	146.2	401.5	62.1	64.1	55.6	53.1	51.7	52.1	58.0	130.2	78.2
20	212.4	273.4	180.1	158.4	338.3	135.5	173.5	186.9	200.5	203.6	229.1	225.0	283.8	151.3	413.1	81.3	87.7	69.5	62.0	54.2	62.7	77.8	165.9	78.0
21	169.9	190.0	194.4	167.0	340.7	139.6	167.7	183.1	195.7	202.8	233.0	238.5	280.8	155.0	376.0	98.5	106.3	82.6	77.7	68.6	68.9	76.9	148.1	91.7
22	162.9	204.8	207.8	169.3	341.7	137.4	161.8	178.3	189.8	203.7	237.9	246.2	276.8	157.3	379.2	119.2	127.7	101.0	93.5	76.8	80.4	97.1	190.9	98.3
23	153.4	201.1	217.5	182.2	361.8	133.9	152.8	167.4	176.9	192.9	226.6	251.5	275.0	160.1	389.5	136.5	147.4	125.2	143.5	129.0	120.9	145.9	218.3	109.2
24	150.7	203.4	228.6	192.9	372.9	130.5	148.6	163.4	172.8	191.2	227.3	258.2	282.5	164.7	399.6	147.8	158.8	130.0	184.2	178.8	154.6	177.9	215.1	116.4
25	138.1	183.5	238.5	197.6	384.5	127.0	140.7	150.5	157.9	179.9	218.4	257.1	284.1	169.0	399.7	164.5	164.0	131.5	199.6	270.4	249.4	285.8	226.3	125.3
26	129.8	172.0	243.0	192.5	377.3	121.9	132.0	139.9	147.4	170.0	207.4	251.1	281.7	172.8	397.6	171.1	161.8	129.9	201.1	288.9	273.9	334.1	263.4	136.1
27	126.7	169.2	251.1	200.8	375.1	116.8	124.4	130.4	141.1	161.8	199.8	247.0	279.5	176.4	405.4	167.8	157.3	128.8	193.7	254.2	313.1	360.8	344.9	150.0
28	119.1	170.4	253.9	203.7	382.3	110.6	114.3	117.5	131.7	151.7	195.5	241.5	275.5	180.3	409.2	164.8	154.1	124.8	186.5	234.3	312.0	353.3	397.8	172.3
29	111.3	155.8	251.8	207.1	390.6	105.0	107.7	110.6	123.7	144.3	184.4	234.5	269.5	184.7	379.4	162.5	149.9	121.6	180.2	223.4	286.0	341.5	445.0	176.6
30	106.9	154.1	249.9	212.6	400.3	99.7	101.7	104.6	118.1	136.9	178.1	228.5	265.4	188.8	382.7	154.0	144.2	117.5	173.8	213.5	271.7	330.2	470.8	187.8

Table 21. Assembly No. 3, Thermocouple Temperatures for Wall No. 4 (Contract No. A1042)



(Dimensions are in millimetres)

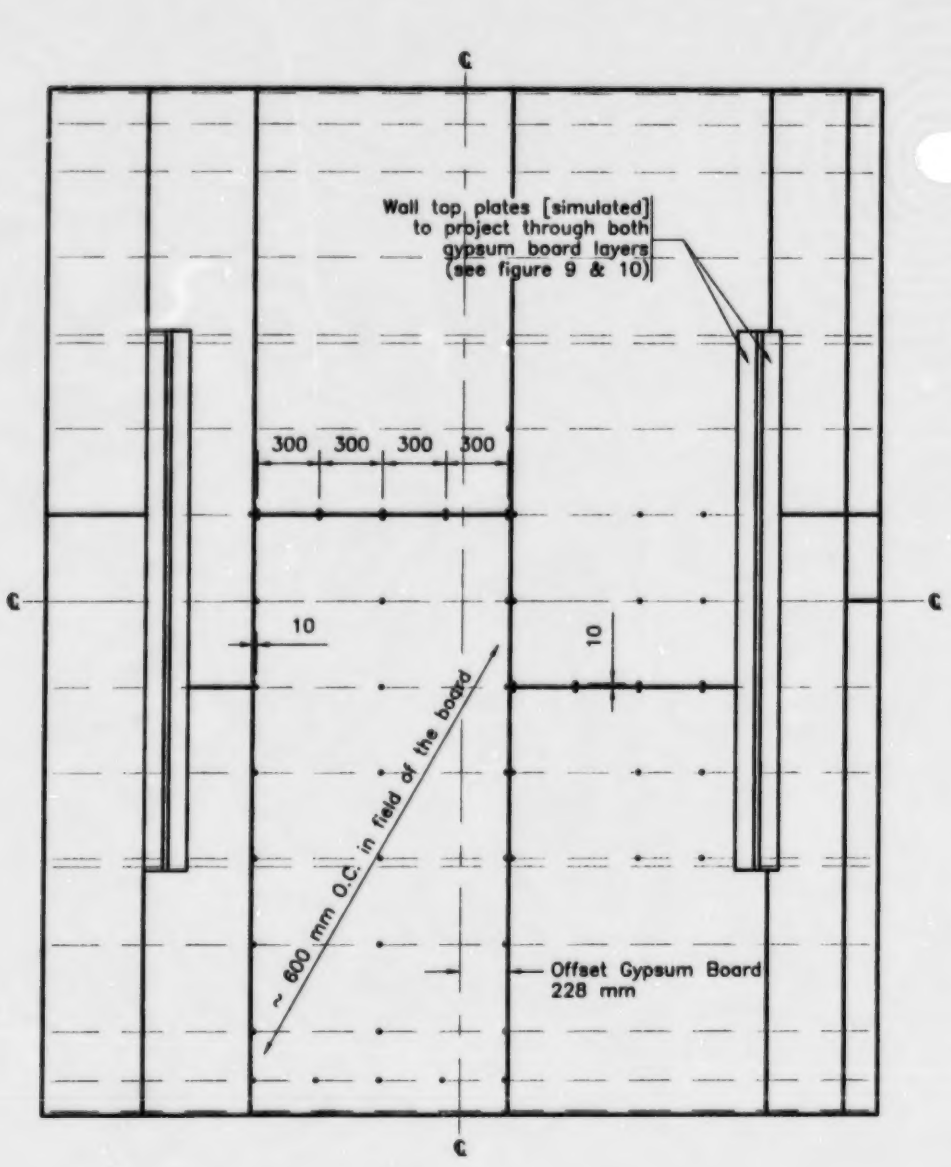
Figure 1. Assembly No. 1, Wood Joist Floor Layout
(Contract No. A1042)



Notes: Subfooring: 15.9 mm x 1219 mm x 2438 mm T&G sheating CSP–CSA–0151
Nails: 51 mm common

(Dimensions are in millimetres)

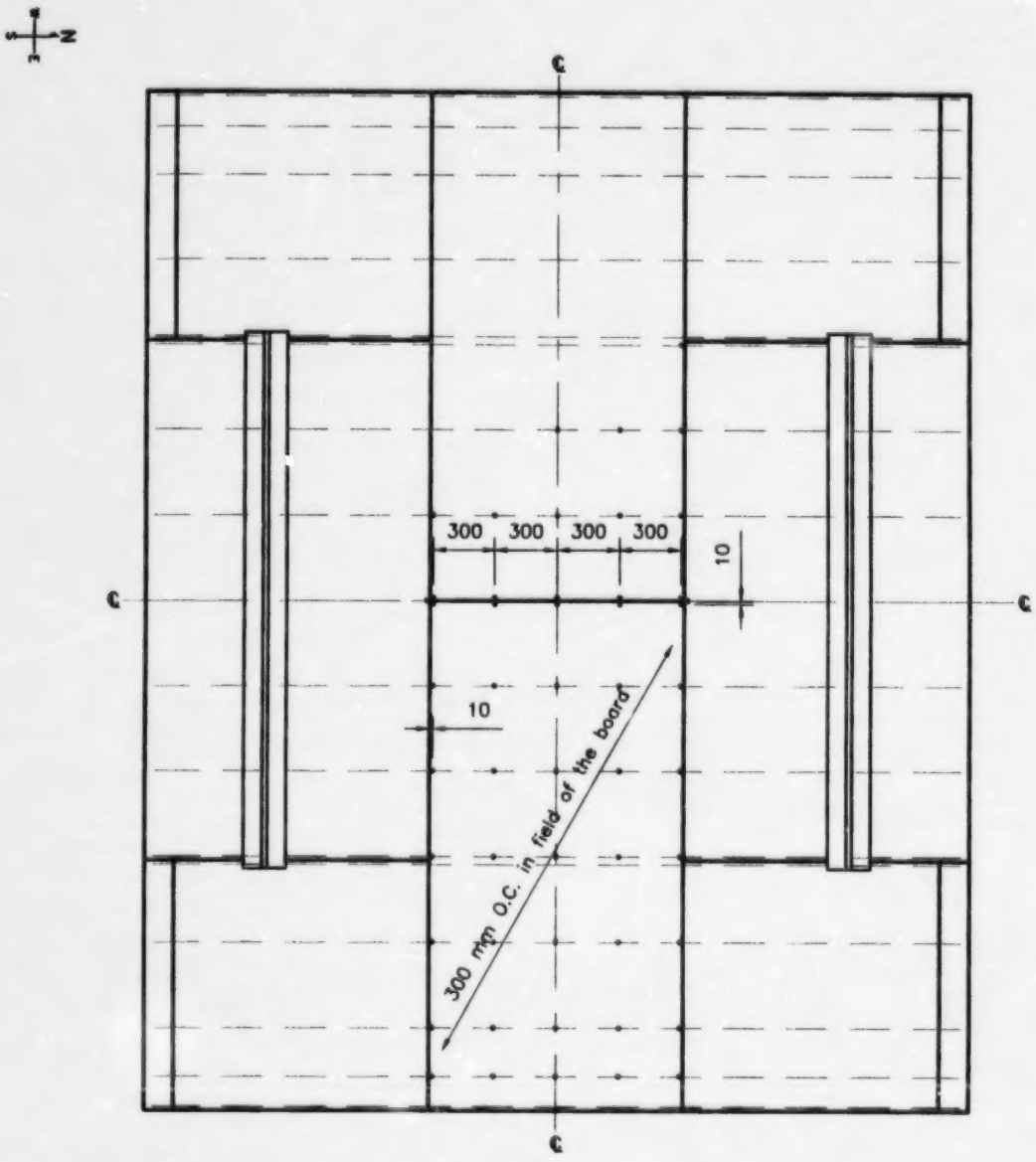
Figure 2. Assembly No. 1, Plywood Subfloor Arrangement
(Contract No. A1042)



Notes: Gypsum Board: 15.9 mm x 1219.2 mm x 3048 mm Westroc / Type X
Drywall screws: 41 mm long
Floor/wall insulation: glass fibre batts: 89 mm x 381 mm x 1194 mm Rsi 2.1

(Dimensions are in millimetres)

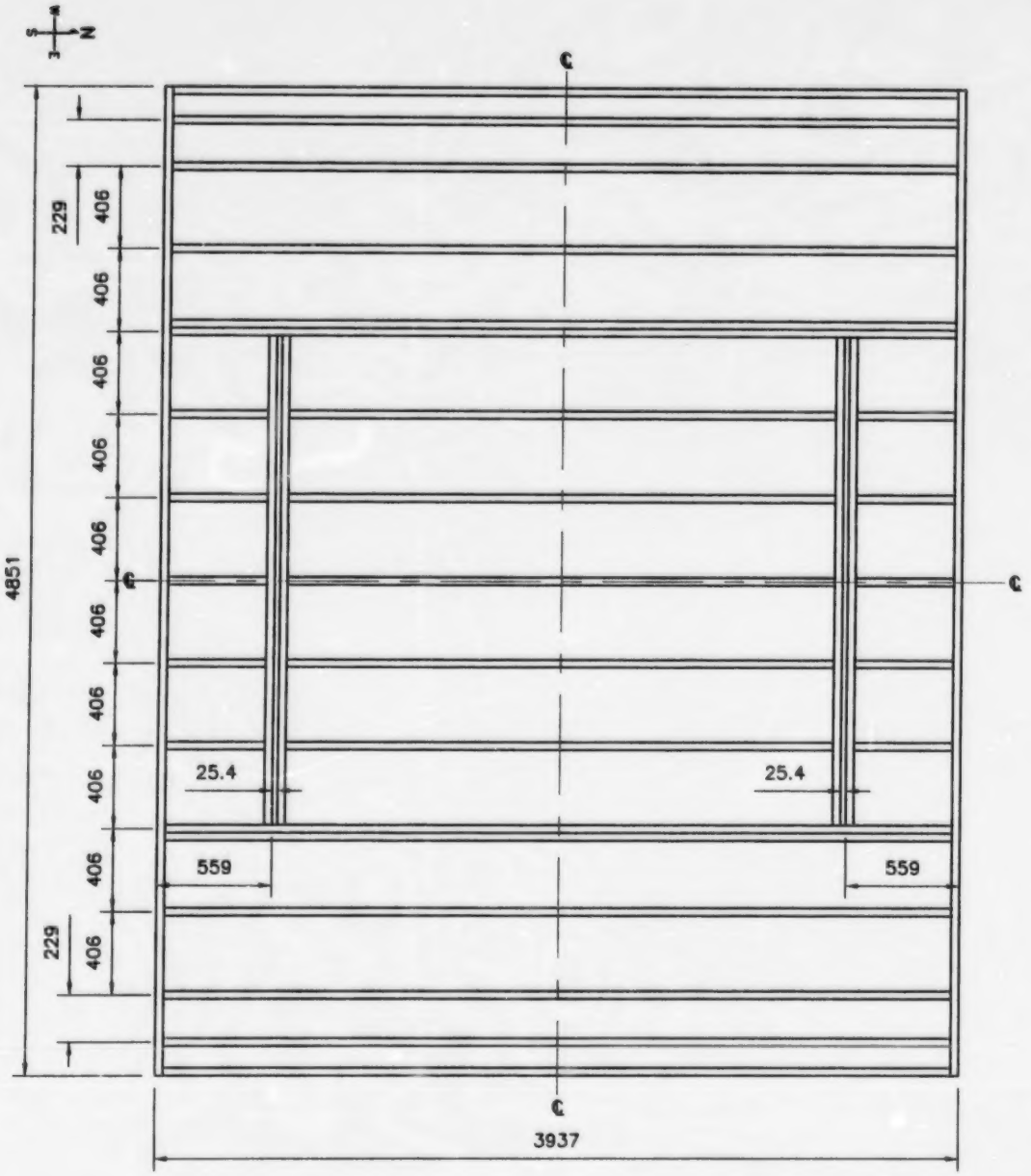
Figure 3. Assembly No. 1, Gypsum Board Base Layer Layout
(Contract No. A1042)



Notes: Gypsum board: 15.9 mm x 1219.2 mm x 3048 mm Westroc / Type X
Drywall screws: 51 mm long
Floor/wall insulation: glass fibre batts: 89 mm x 381 mm x 1194 mm Rsi 2.1

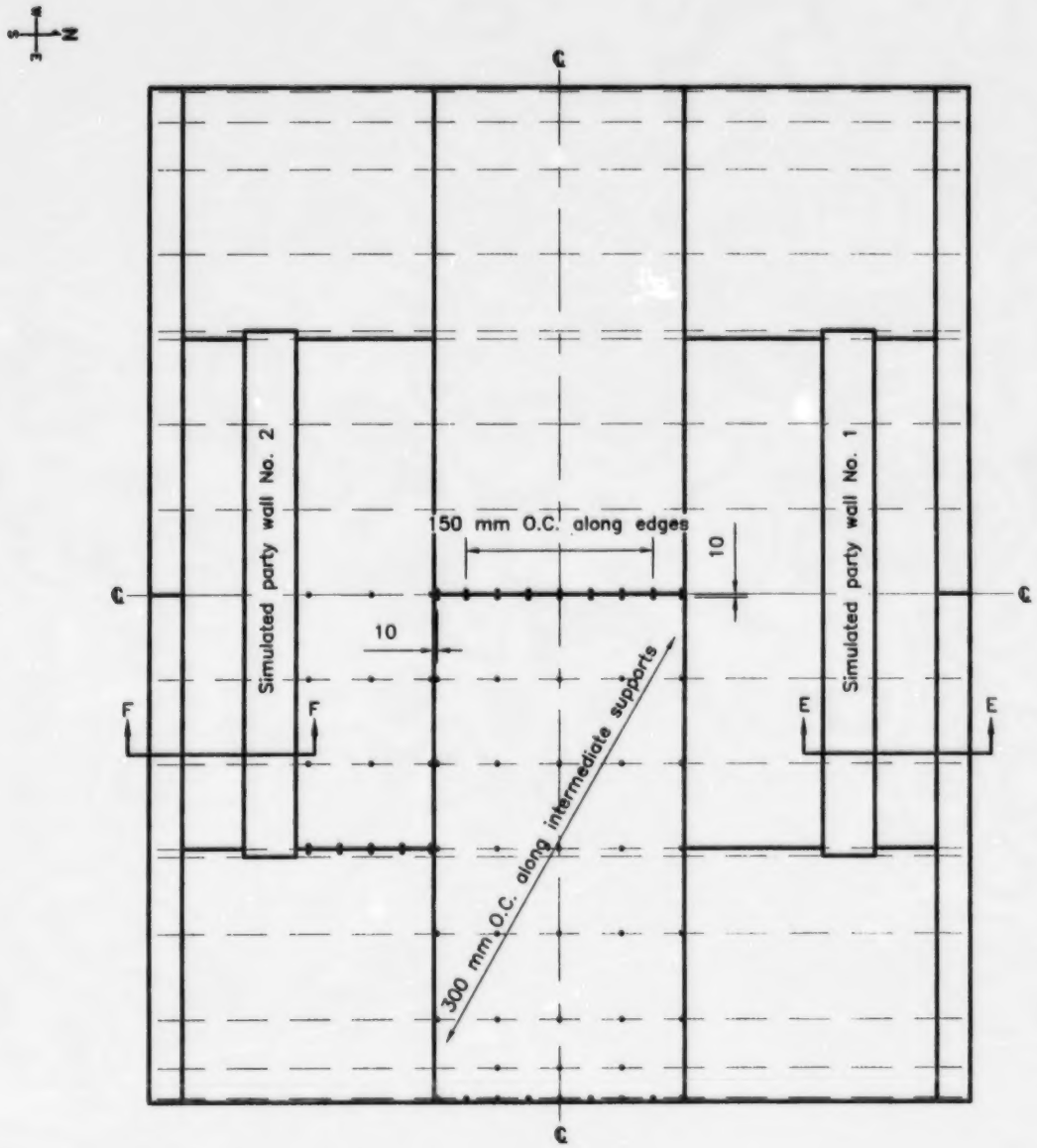
(Dimensions are in millimetres)

Figure 4. Assembly No. 1, Gypsum Board Face Layer Layout
(Contract No. A1042)



(Dimensions are in millimetres)

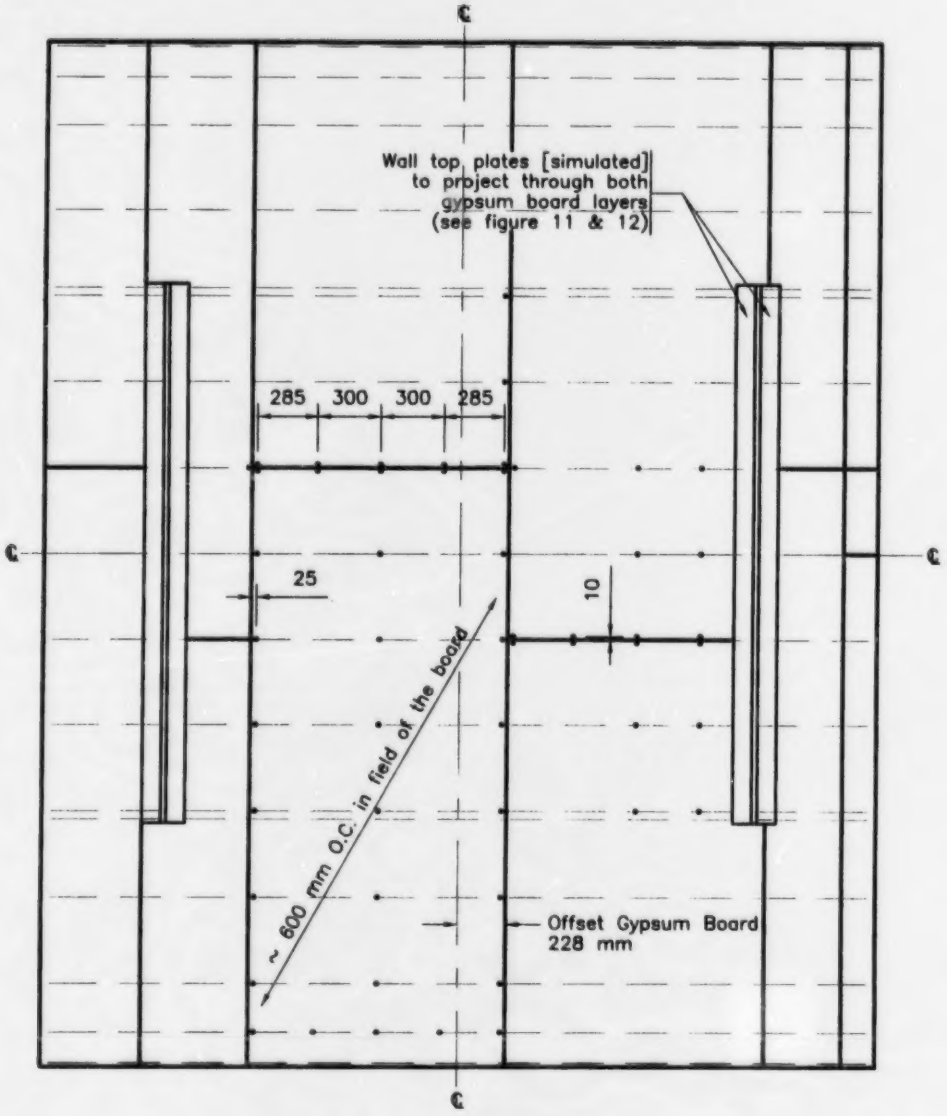
Figure 5. Assembly No. 2, Wood Joist Floor Layout
(Contract No. A1042)



Notes: Subflooring: 15.9 mm x 1219 mm x 2438 mm T&G sheathing CSP–CSA–0151
Nails: 51 mm common

(Dimensions are in millimetres)

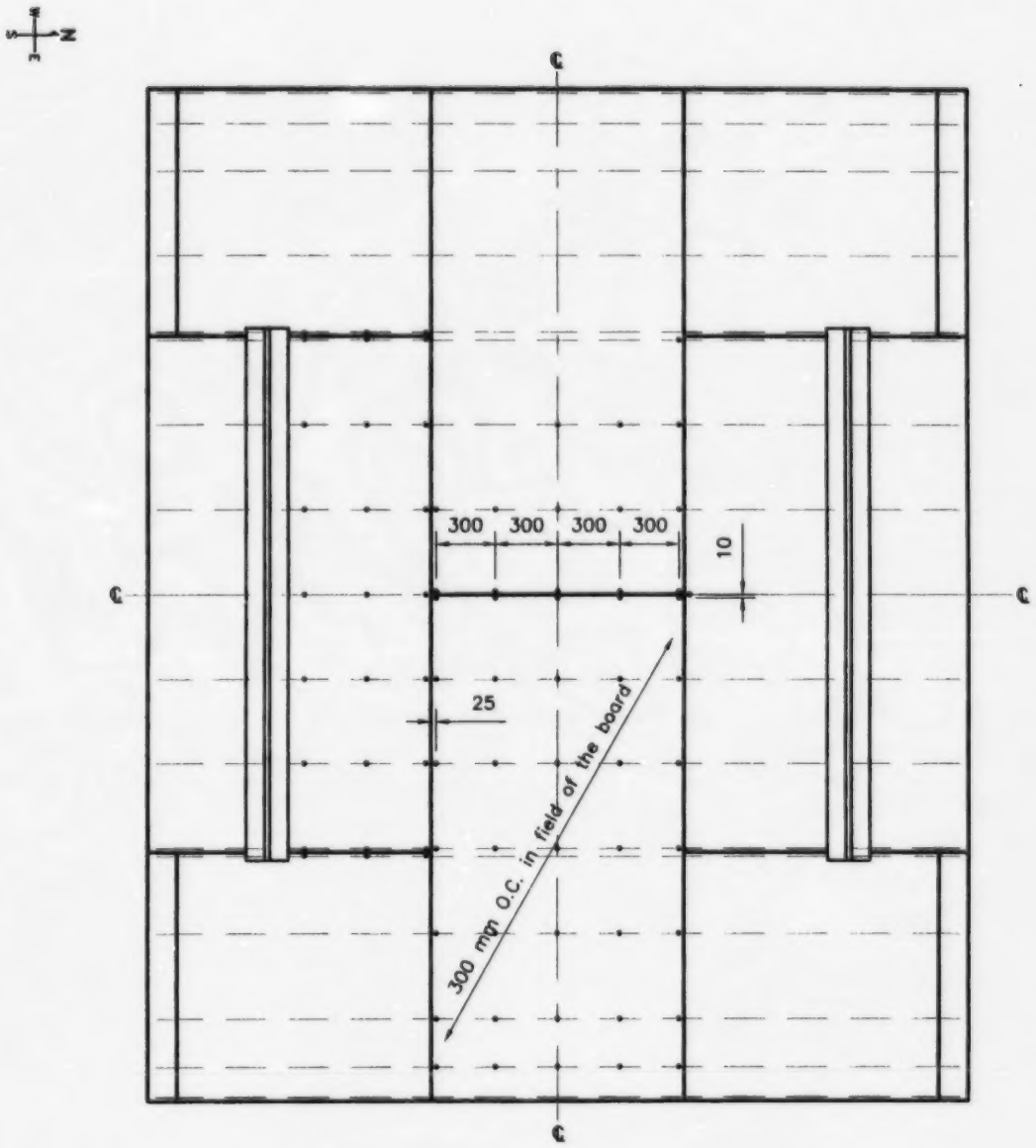
Figure 6. Assembly No. 2, Plywood Subfloor Arrangement
(Contract No. A1042)



Notes: Gypsum board: 12.7 mm x 1219.2 mm x 3048 mm Domtar
Drywall screws: 41 mm long
Floor/wall insulation: glass fibre batts: 89 mm x 381 mm x 1194 mm Rsi 2.1

(Dimensions are in millimetres)

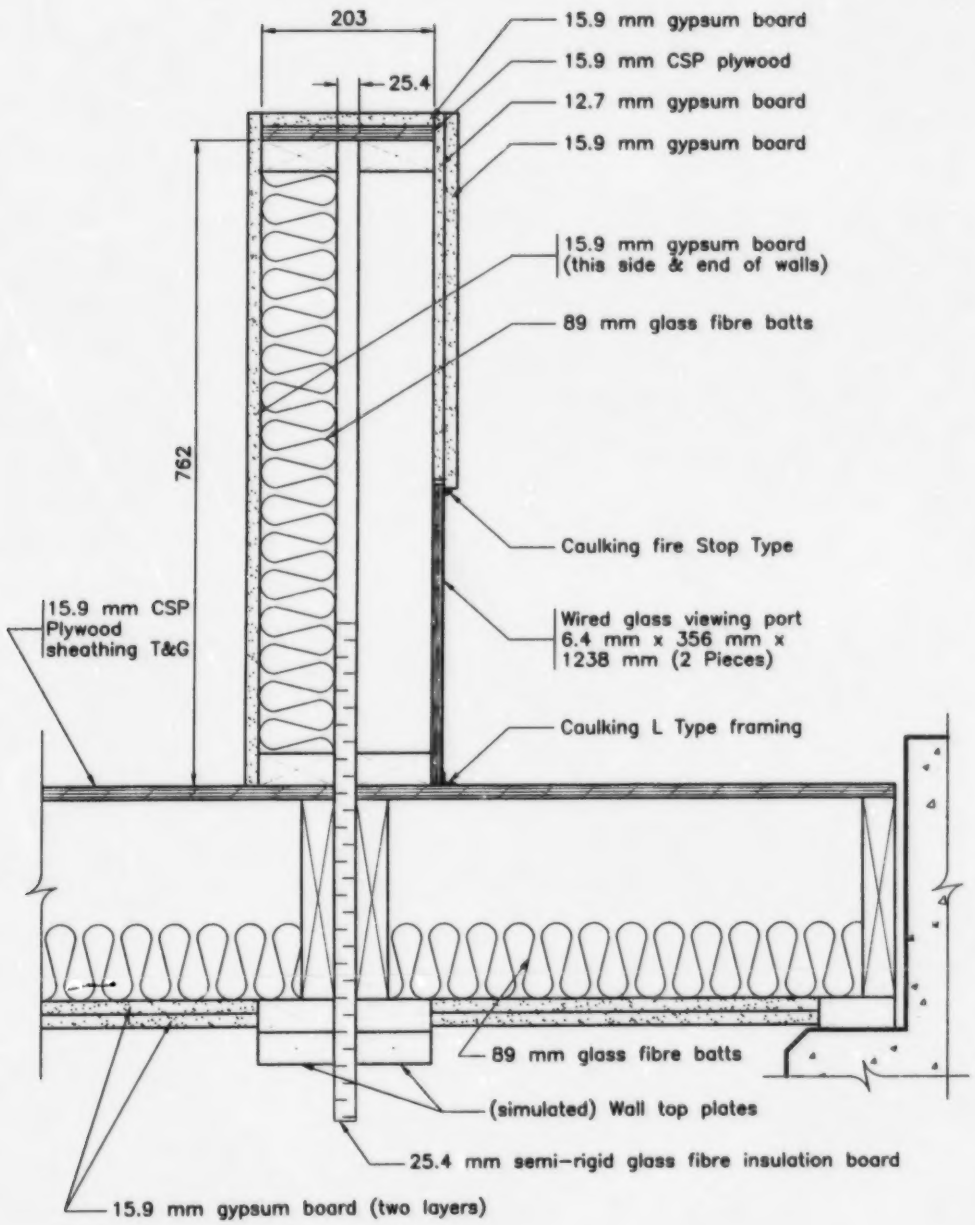
Figure 7. Assembly No. 2, Gypsum Board Base Layer Layout
(Contract No. A1042)



Notes: Gypsum board: 12.7 mm x 1219.2 mm x 3048 mm Domtar
Drywall screws: 51 mm long
Floor/wall insulation: glass fibre batts: 89 mm x 381 mm x 1194 mm Rsi 2.1

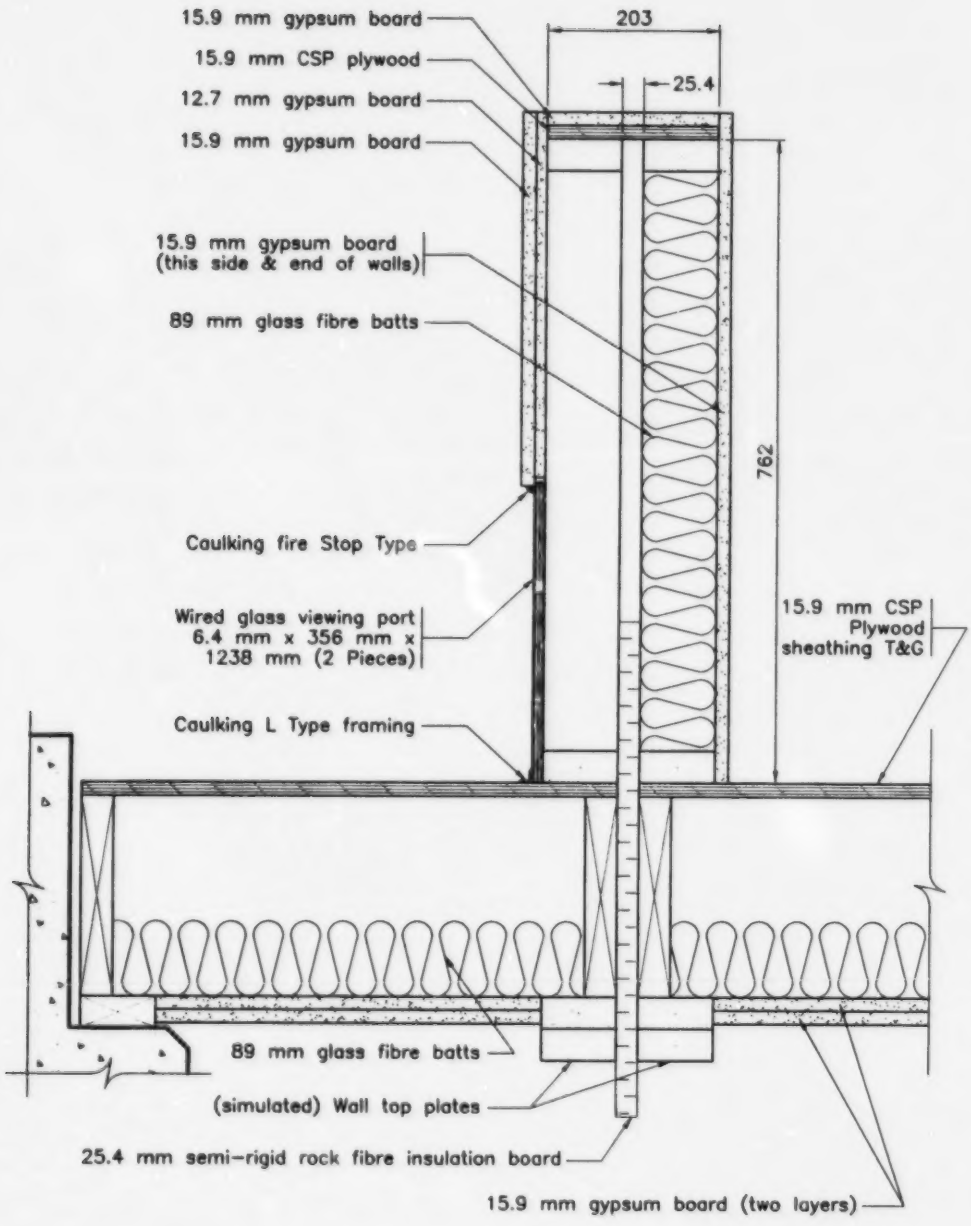
(Dimensions are in millimetres)

Figure 8. Assembly No. 2, Gypsum Board Face Layer Layout
(Contract No. A1042)



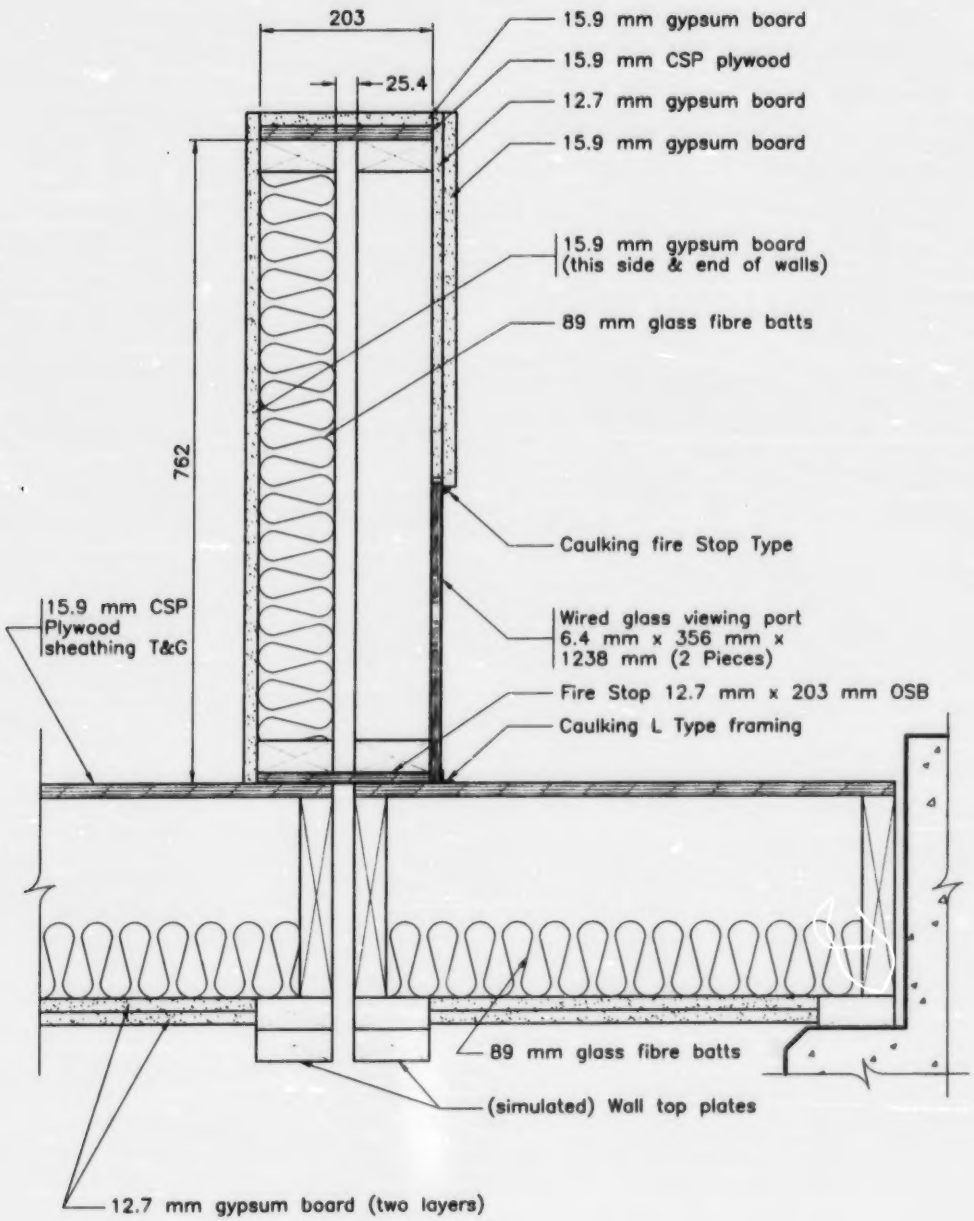
(Dimensions are in millimetres)

Figure 9. Assembly No. 1, Wall No. 1 Layout (Section A–A)
(Contract No. A1042)



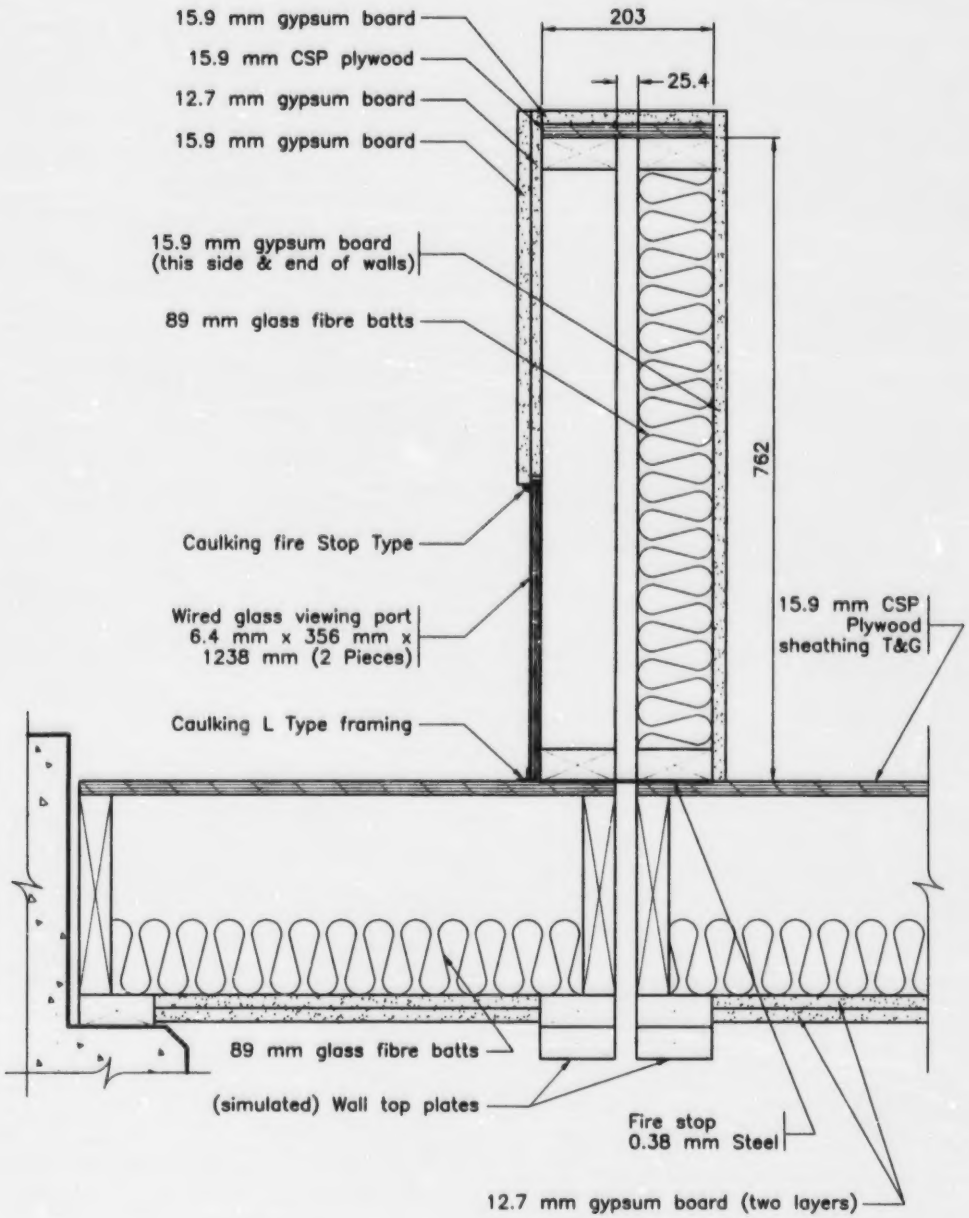
(Dimensions are in millimetres)

Figure 10. Assembly No. 1, Wall No. 2 Layout (Section B–B)
(Contract No. A1042)



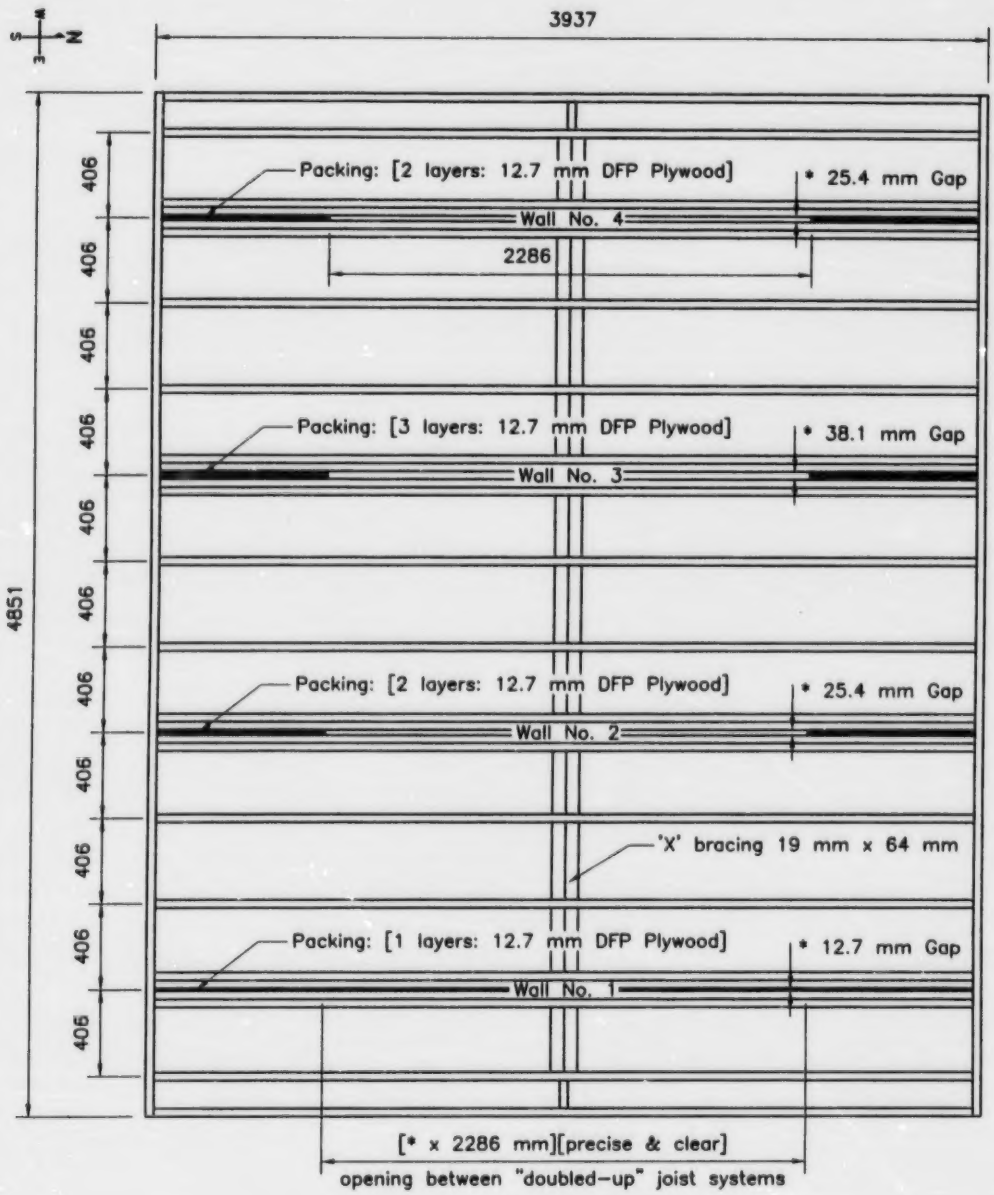
(Dimensions are in millimetres)

Figure 11. Assembly No. 2, Wall No. 1 Layout (Section E–E)
(Contract No. A1042)



(Dimensions are in millimetres)

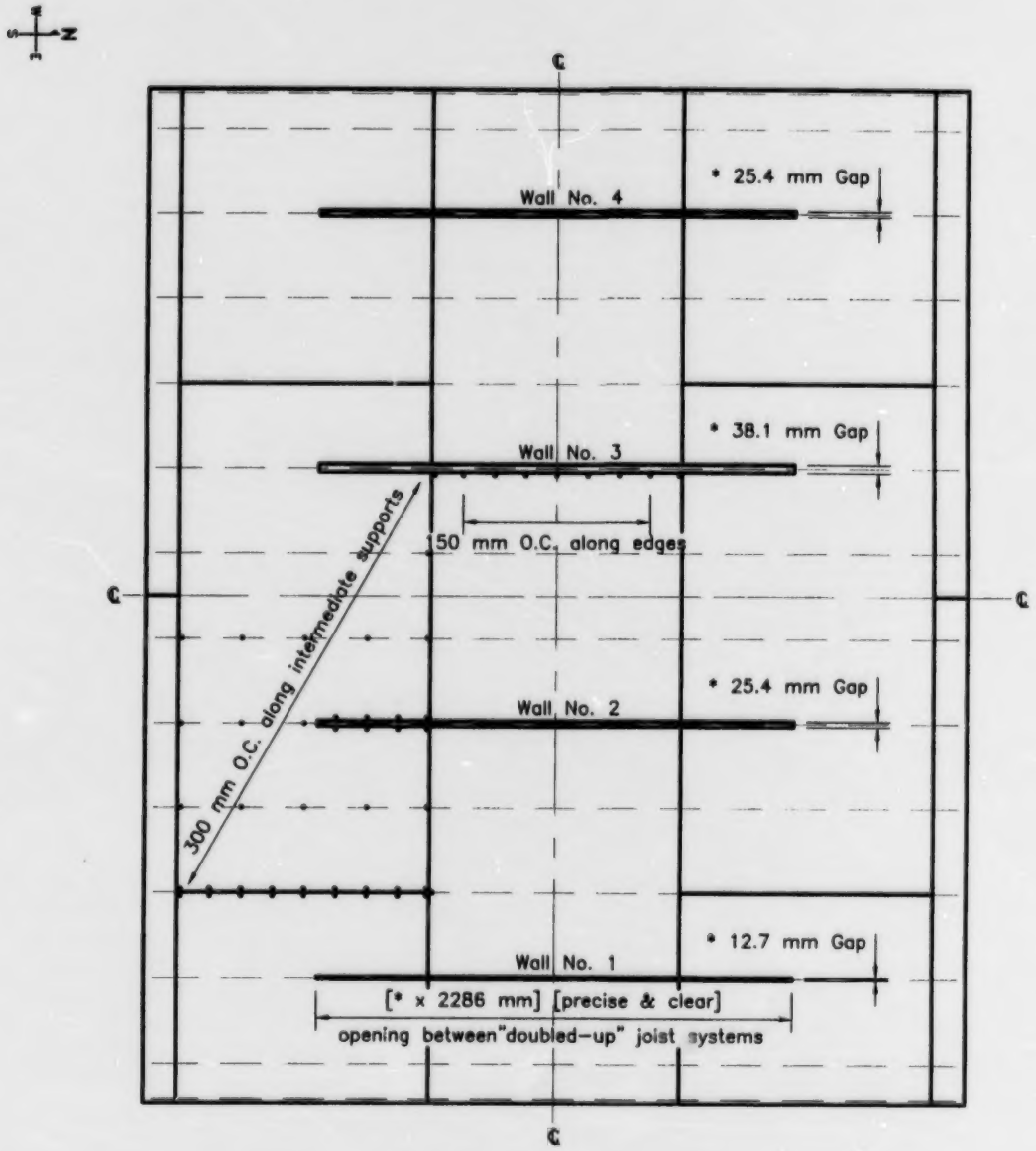
Figure 12. Assembly No. 2, Wall No. 2 Layout (Section F–F)
(Contract No. A1042)



Notes: Joist: 38 mm x 235 mm S.P.F., No. 2 & 1 (N.LGA. Rules) S.Dry

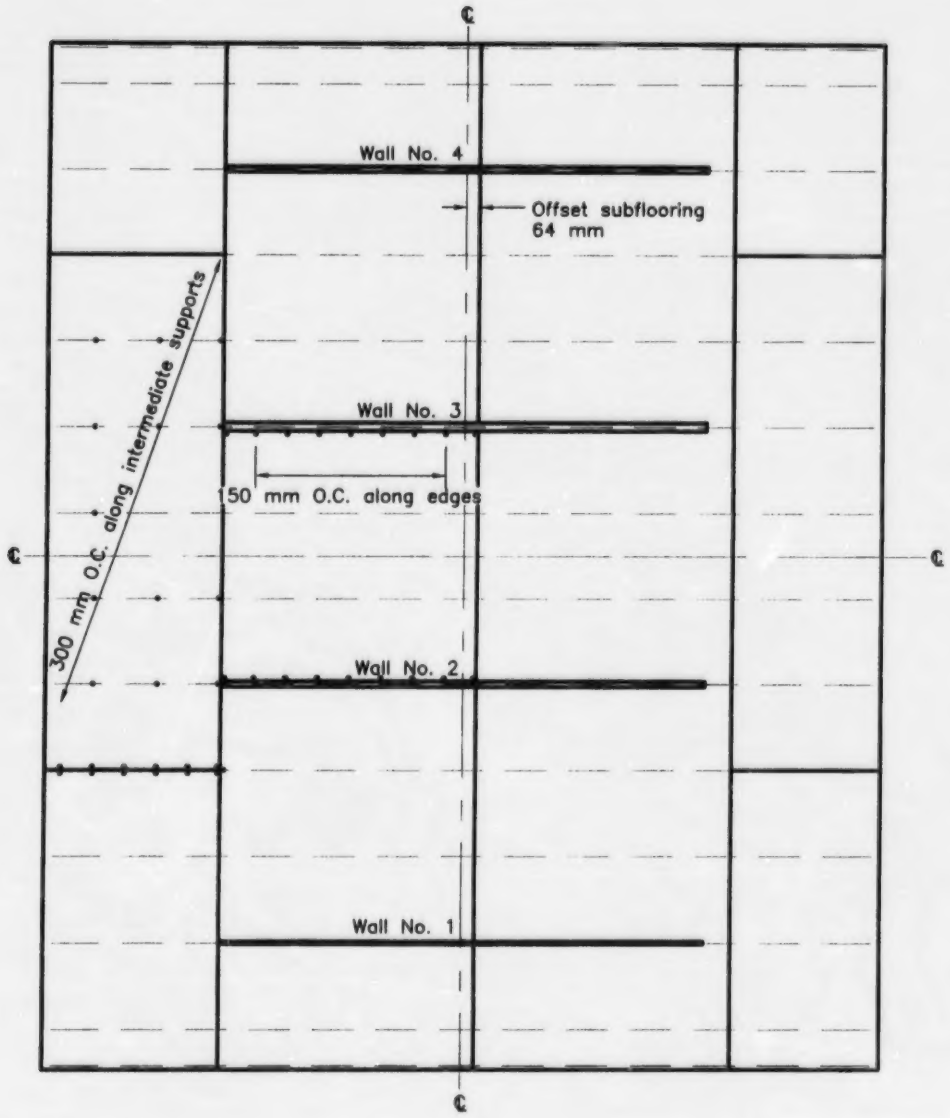
(Dimensions are in millimetres)

Figure 13. Assembly No. 3, Wood Joist Floor Layout
(Contract No. A1042)



Notes: Subflooring: 15.9 mm x 1219 mm x 2438 mm T&G sheathing CSP-CSA-0151
Nails: 51 mm common

Figure 14. Assembly No. 3, Plywood Subfloor Arrangement (Base Layer)
(Contract No. A1042)



Notes: Subflooring: 15.9 mm x 1219 mm x 2438 mm T&G sheathing CSP–CSA–0151
Nails: 64 mm common

Figure 15. Assembly No. 3, Plywood Subfloor Arrangement (Face Layer)
(Contract No. A1042)

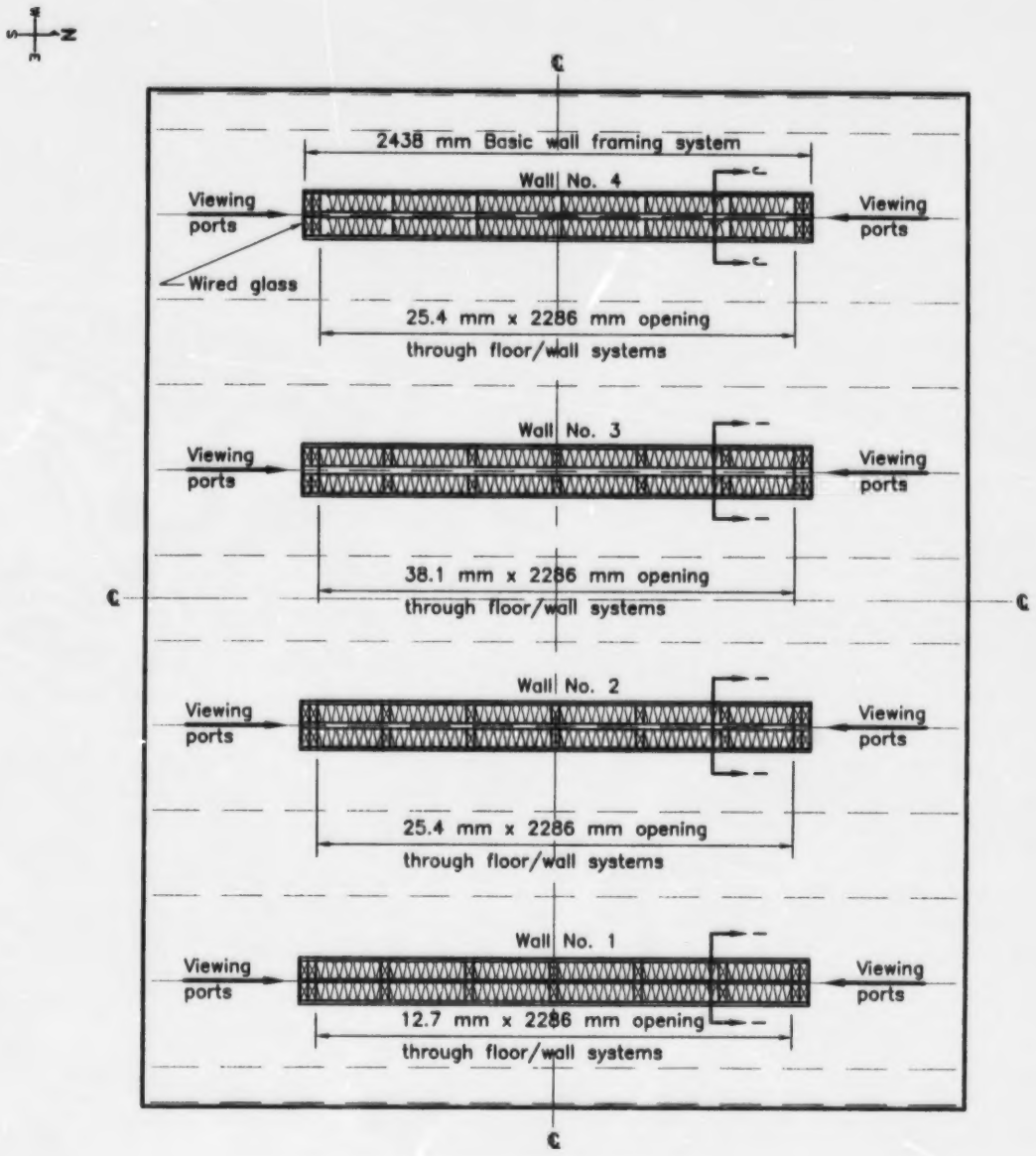
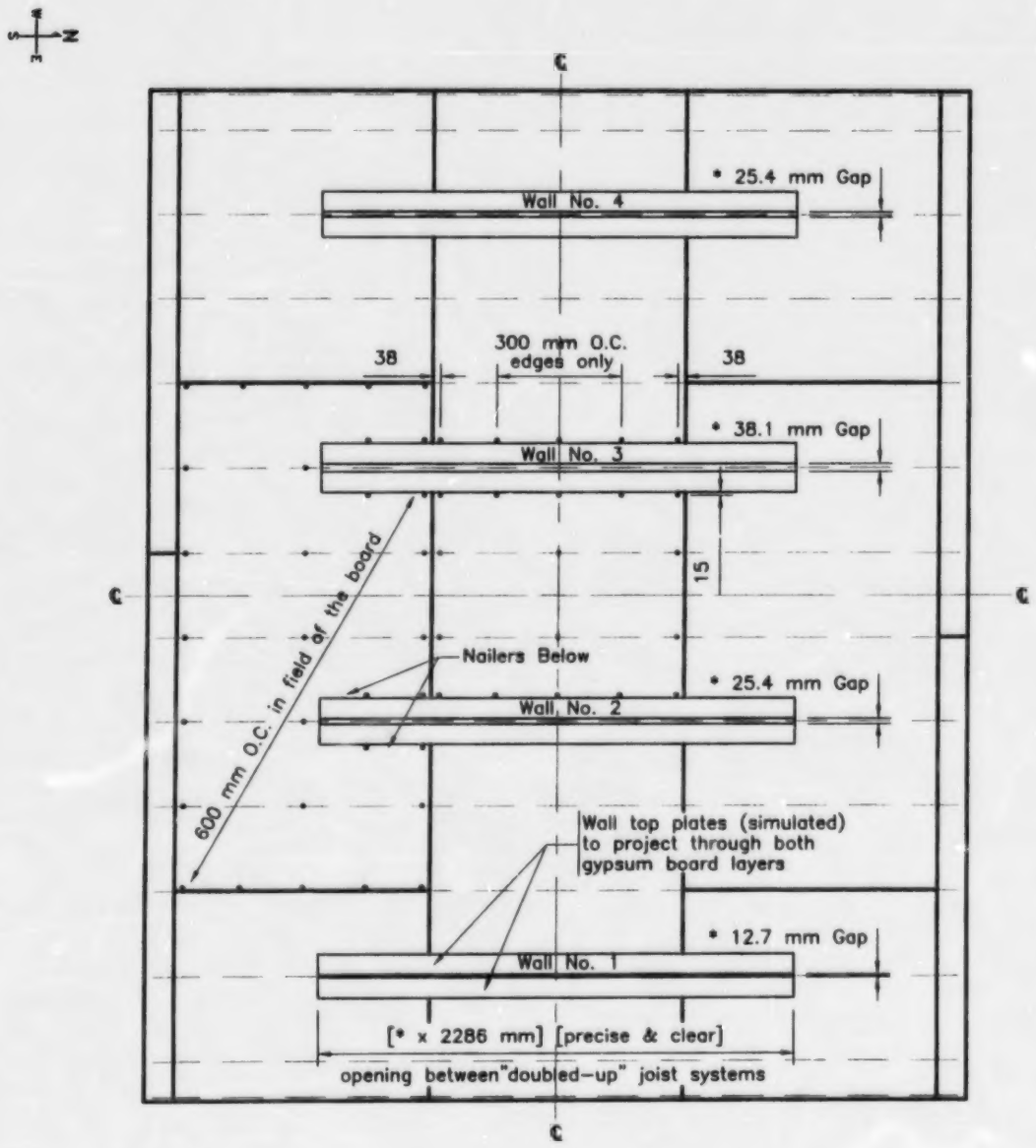


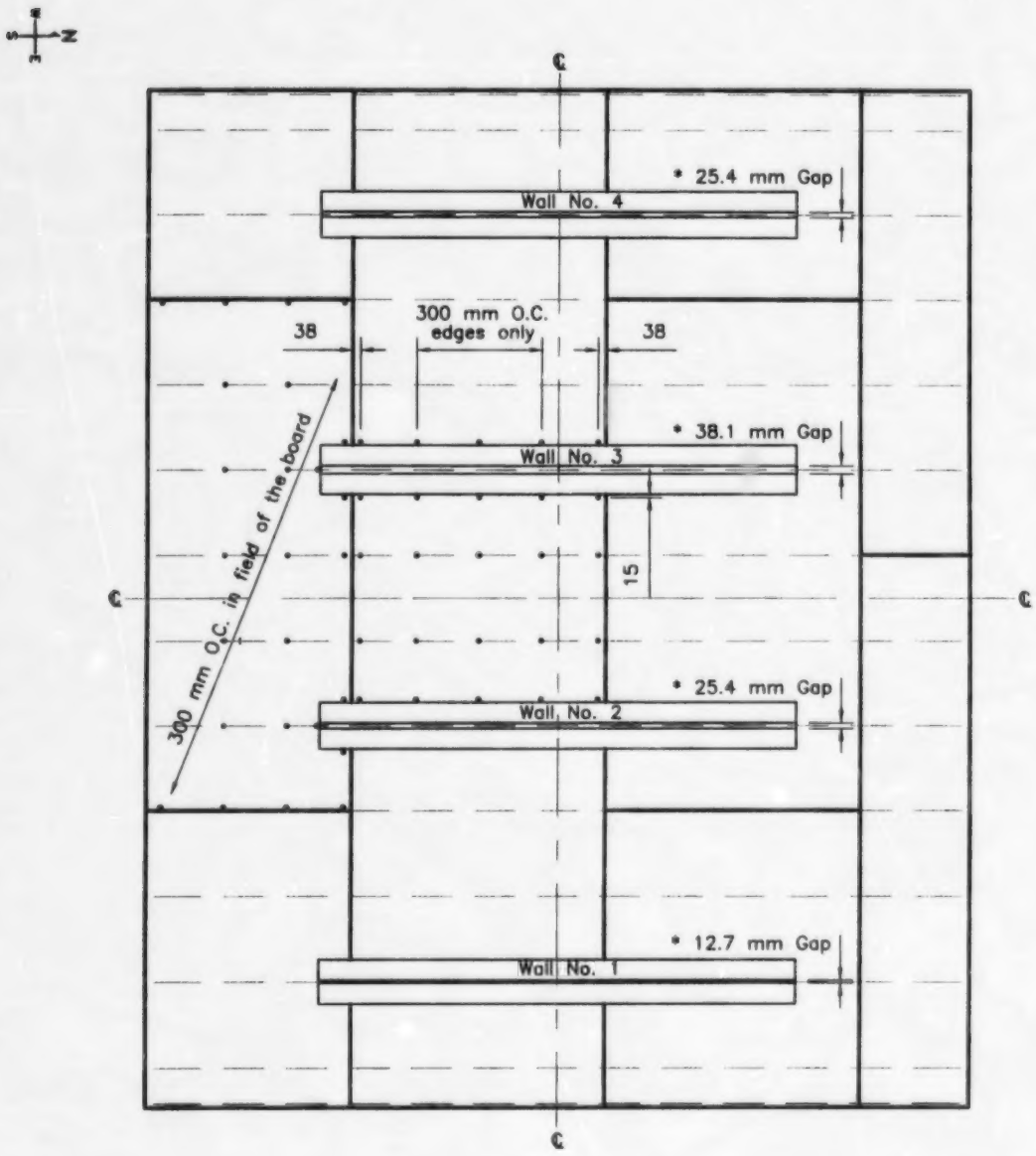
Figure 16. Assembly No. 3, Location of Stud Walls on Flooring System (Contract No. A1042)



Notes: Gypsum board: 12.7 mm x 1219 x 2438 CGC Type X
Drywall screws: 41 mm long
Floor insulation: glass fibre batts 89 mm x 375 mm 1194 mm Rsi 2.29

(Dimensions are in millimetres)

Figure 17. Assembly No. 3, Gypsum Board Base Layer Layout
(Contract No. A1042)



Notes: Gypsum Board: 12.7 mm x 1219 x 2438 CGC Type X
Drywall screws: 51 mm long

(Dimensions are in millimetres)

Figure 18. Assembly No. 3, Gypsum Board Face Layer Layout
(Contract No. A1042)

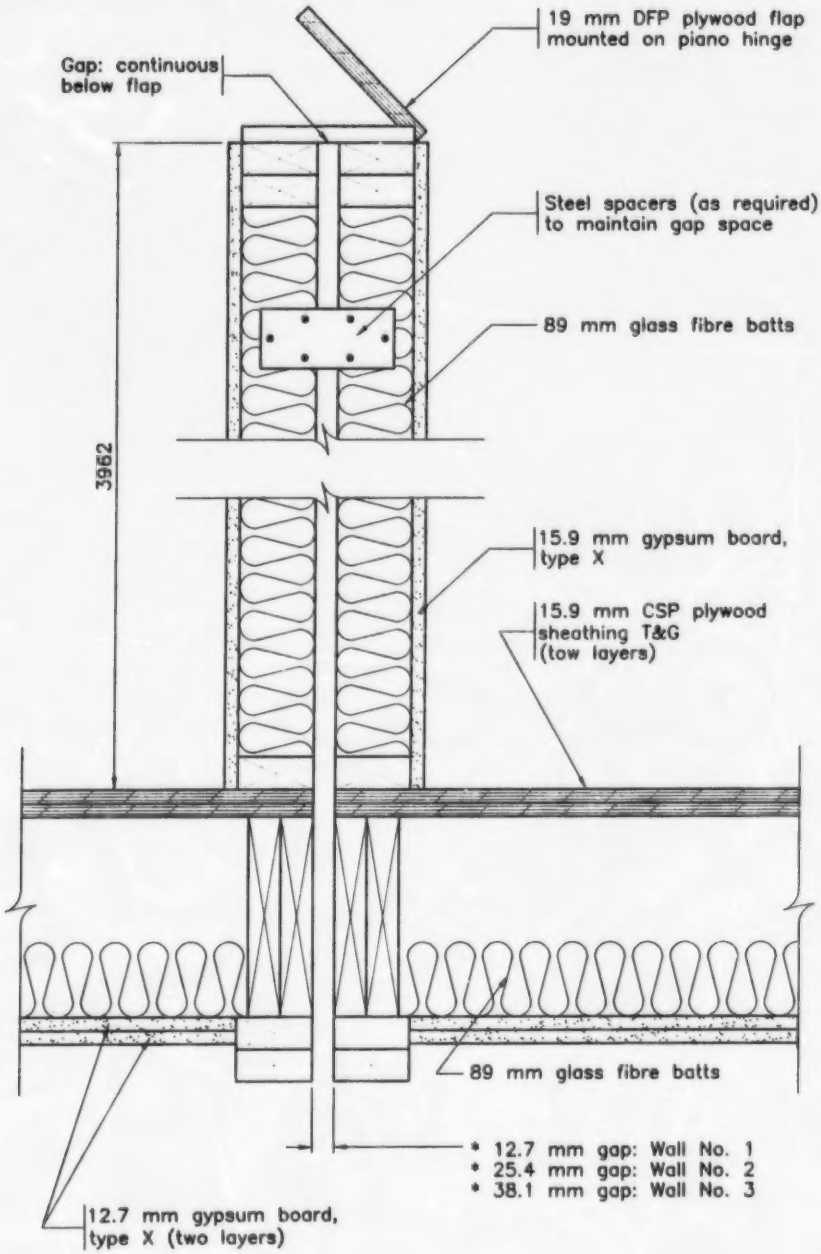
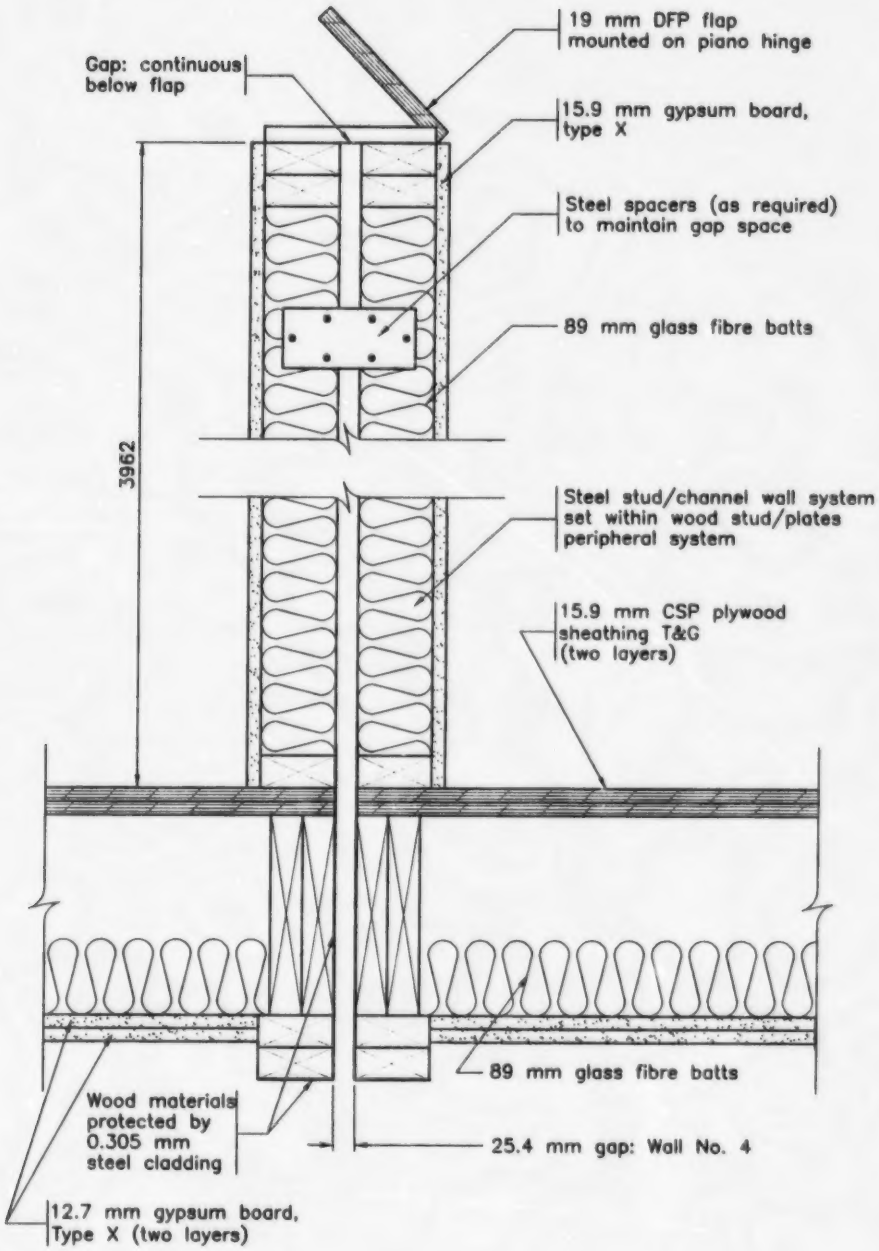
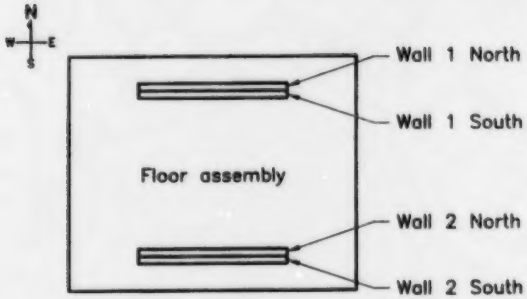

19 mm DFP plywood flap
mounted on piano hinge
Gap: continuous
below flap
Steel spacers (as required)
to maintain gap space
89 mm glass fibre batts
3962
15.9 mm gypsum board,
type X
15.9 mm CSP plywood
sheathing T&G
(tow layers)
89 mm glass fibre batts
* 12.7 mm gap: Wall No. 1
* 25.4 mm gap: Wall No. 2
* 38.1 mm gap: Wall No. 3
12.7 mm gypsum board,
type X (two layers)
(Dimensions are in millimetres)

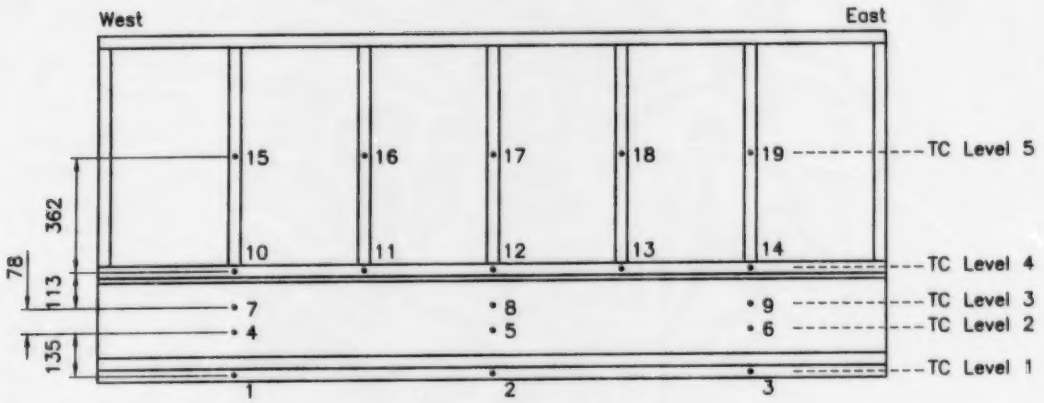
Figure 19. Assembly No. 3, Wall Nos. 1, 2 & 3 Layout (Section I–I)
(Contract No. A1042)



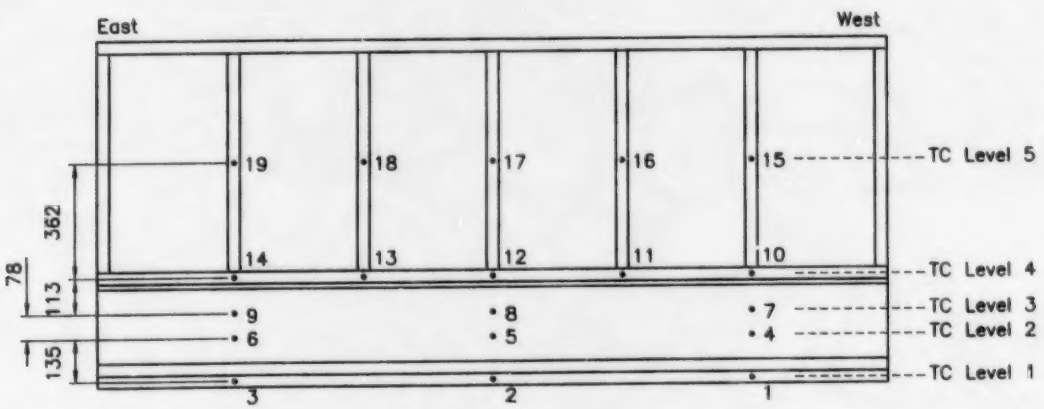
(Dimensions are in millimetres)

Figure 20. Assembly No. 3, Wall No. 4 Layout (Section J–J)
(Contract No. A1042)





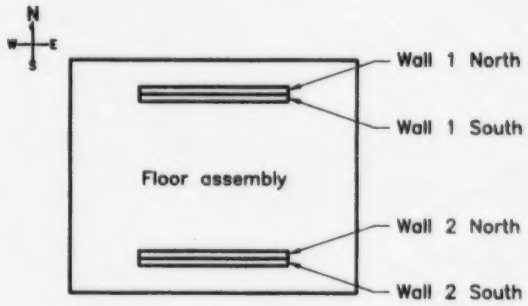
Wall 1 North side (lateral view from inside the gap)

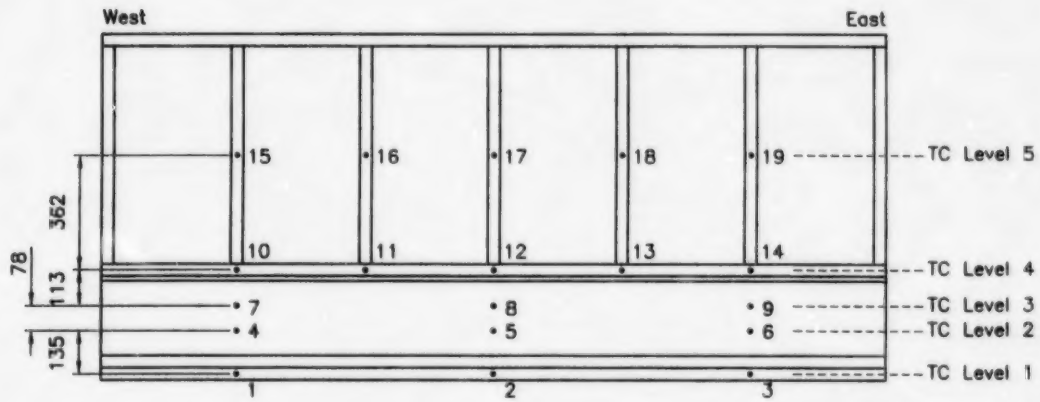


Wall 1 South side (lateral view from inside the gap)

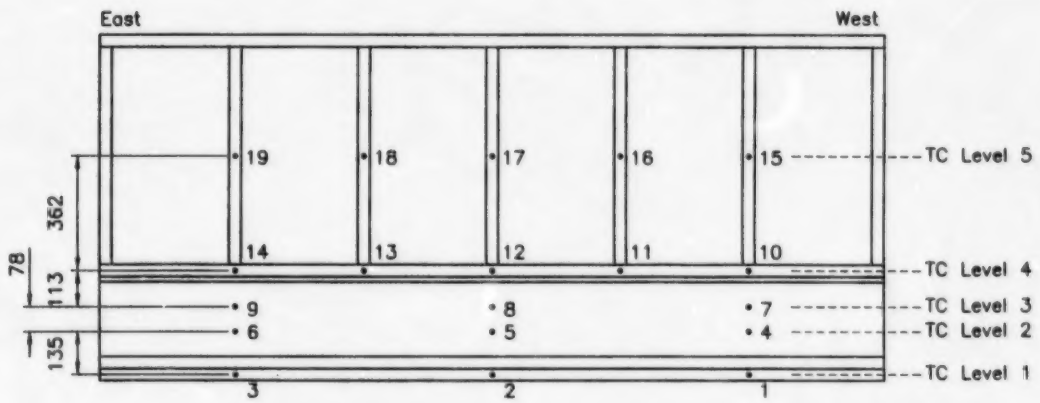
(Dimensions are in millimetres)

Figure 21. Assembly No. 1, Location of Thermocouples inside Wall No. 1 (Contract No. A1042)





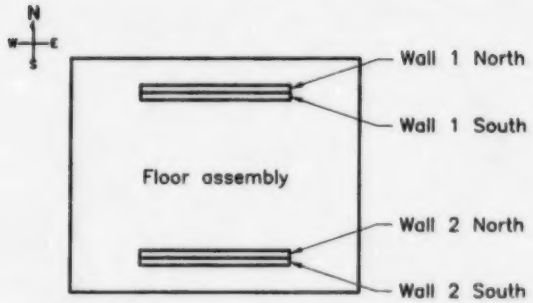
Wall 2 North side (lateral view from inside the gap)

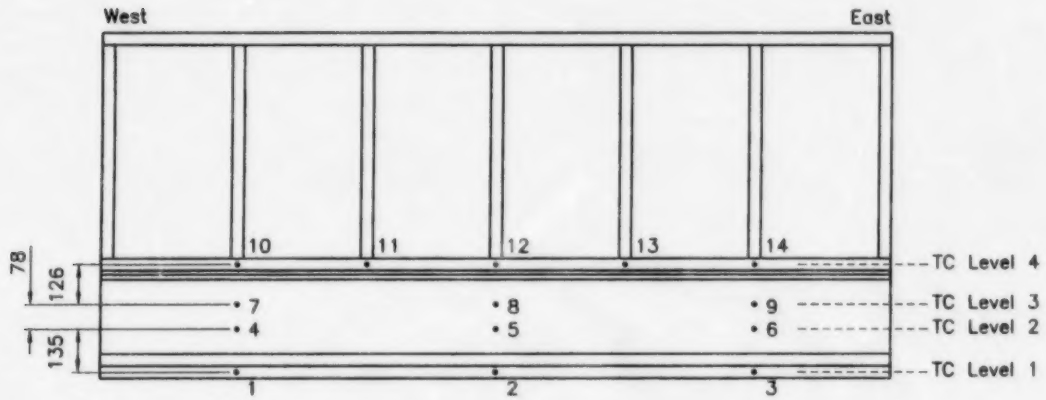


Wall 2 South side (lateral view from inside the gap)

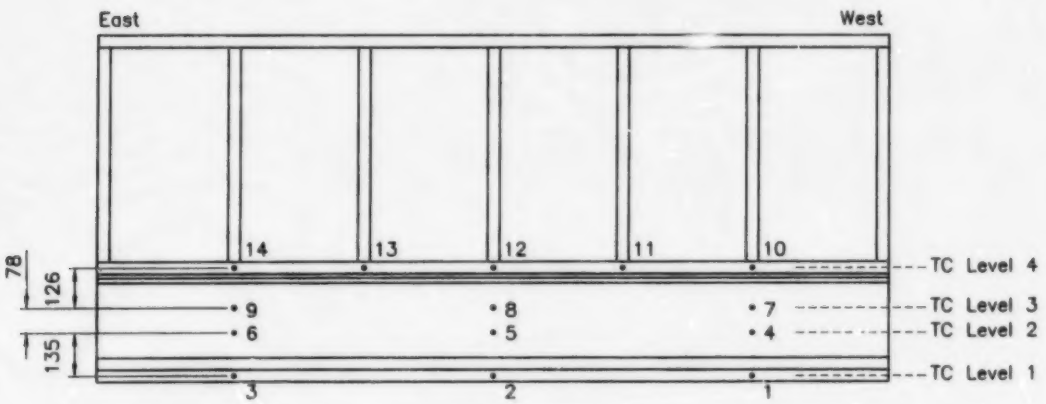
(Dimensions are in millimetres)

Figure 22. Assembly No. 1, Location of Thermocouples inside Wall No. 2 (Contract No. A1042)





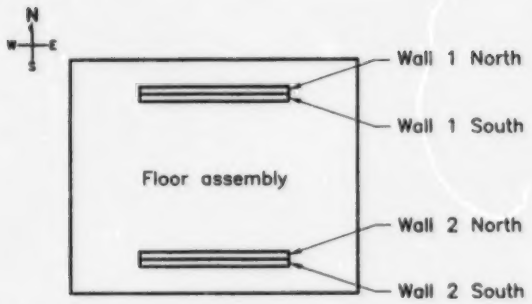
Wall 1 North side (lateral view from inside the gap)

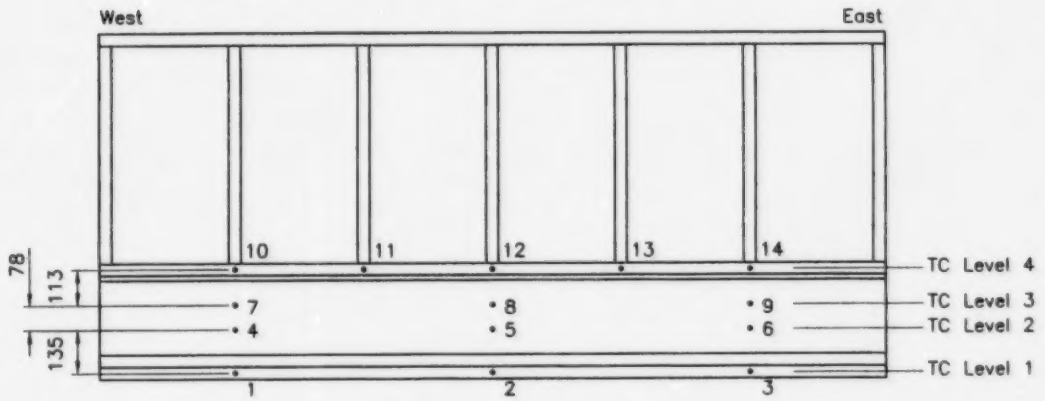


Wall 1 South side (lateral view from inside the gap)

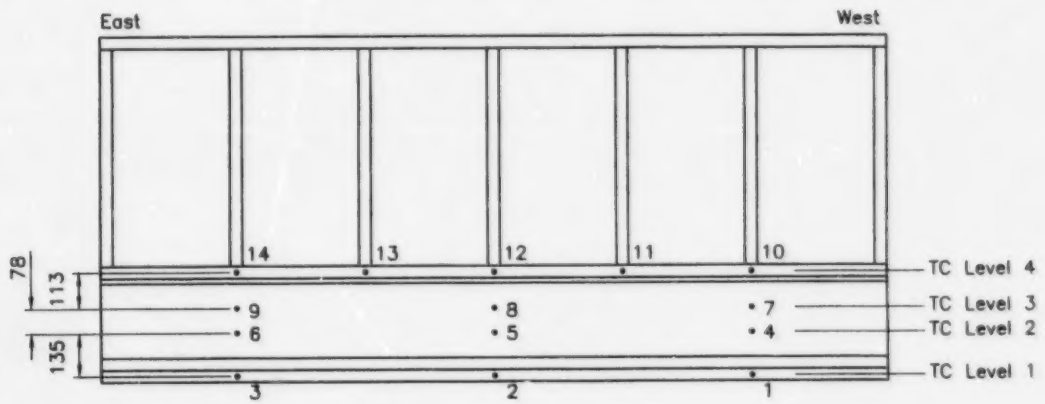
(Dimensions are in millimetres)

Figure 23. Assembly No. 2, Location of Thermocouples inside Wall No. 1 (Contract No. A1042)





Wall 2 North side (lateral view from inside the gap)



Wall 2 South side (lateral view from inside the gap)

(Dimensions are in millimetres)

Figure 24. Assembly No. 2, Location of Thermocouples inside Wall No. 2 (Contract No. A1042)

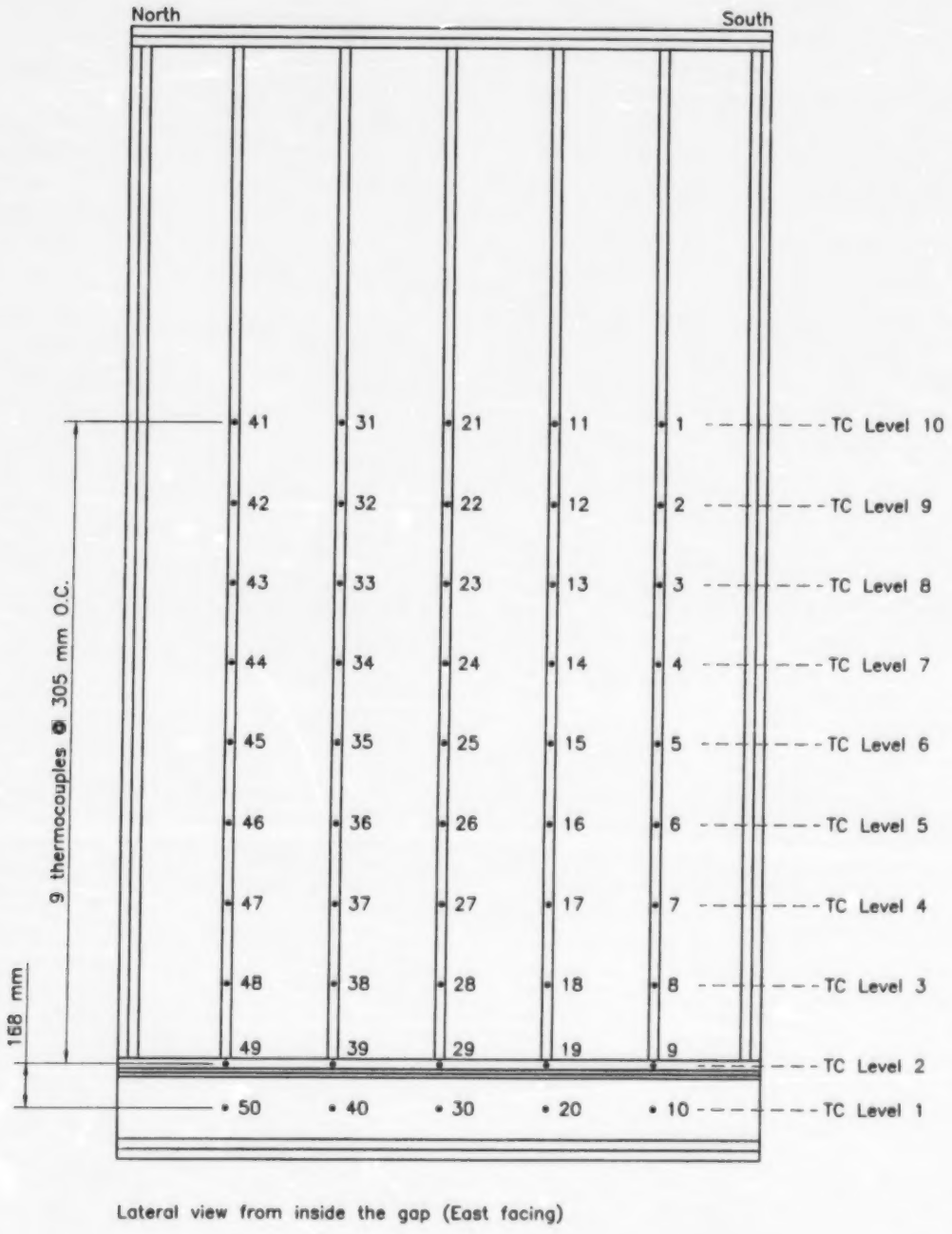


Figure 25. Assembly No. 3, Location of Thermocouples inside Wall No. 1 (Contract No. A1042)

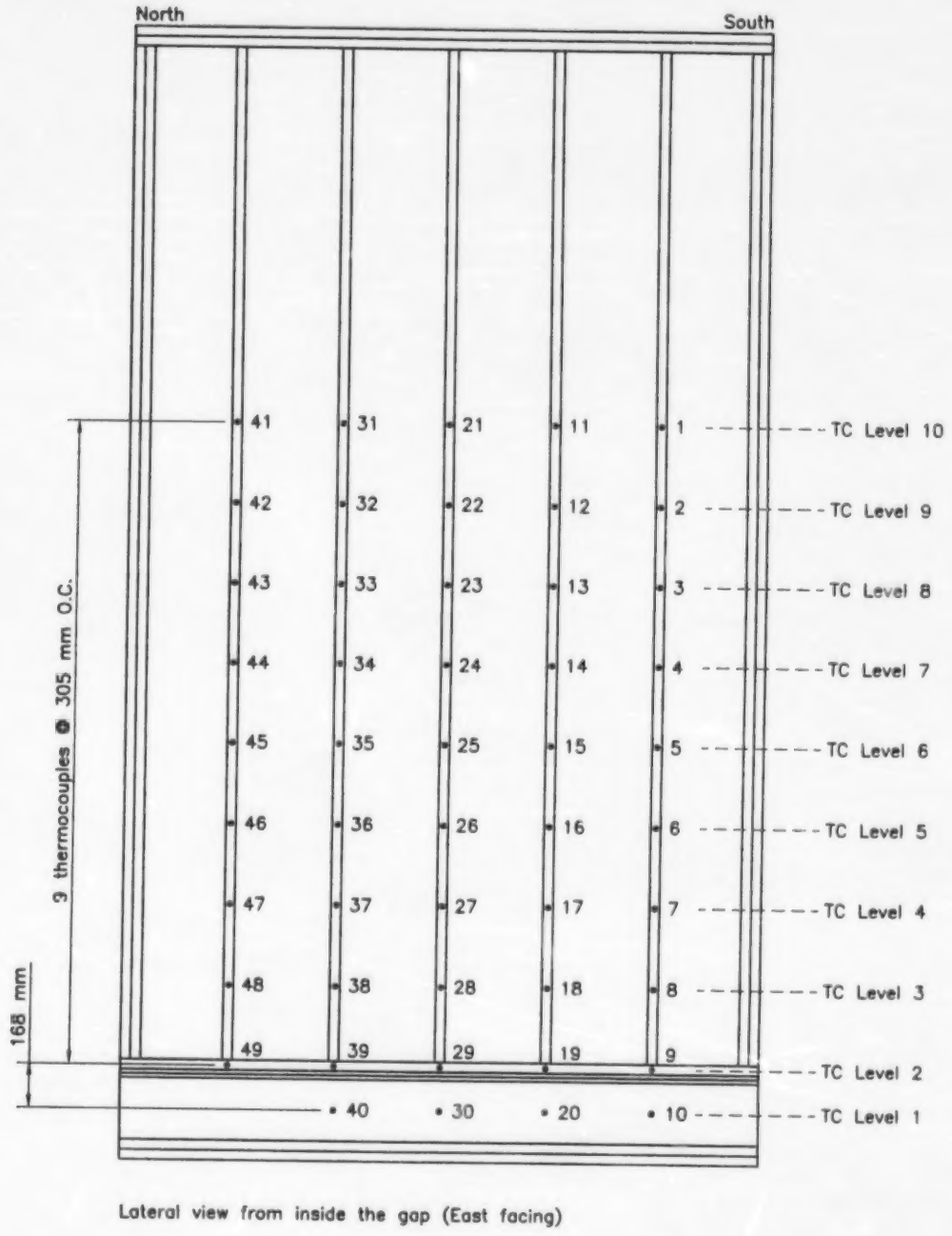


Figure 26. Assembly No. 3, Location of Thermocouples inside Wall No. 2 (Contract No. A1042)

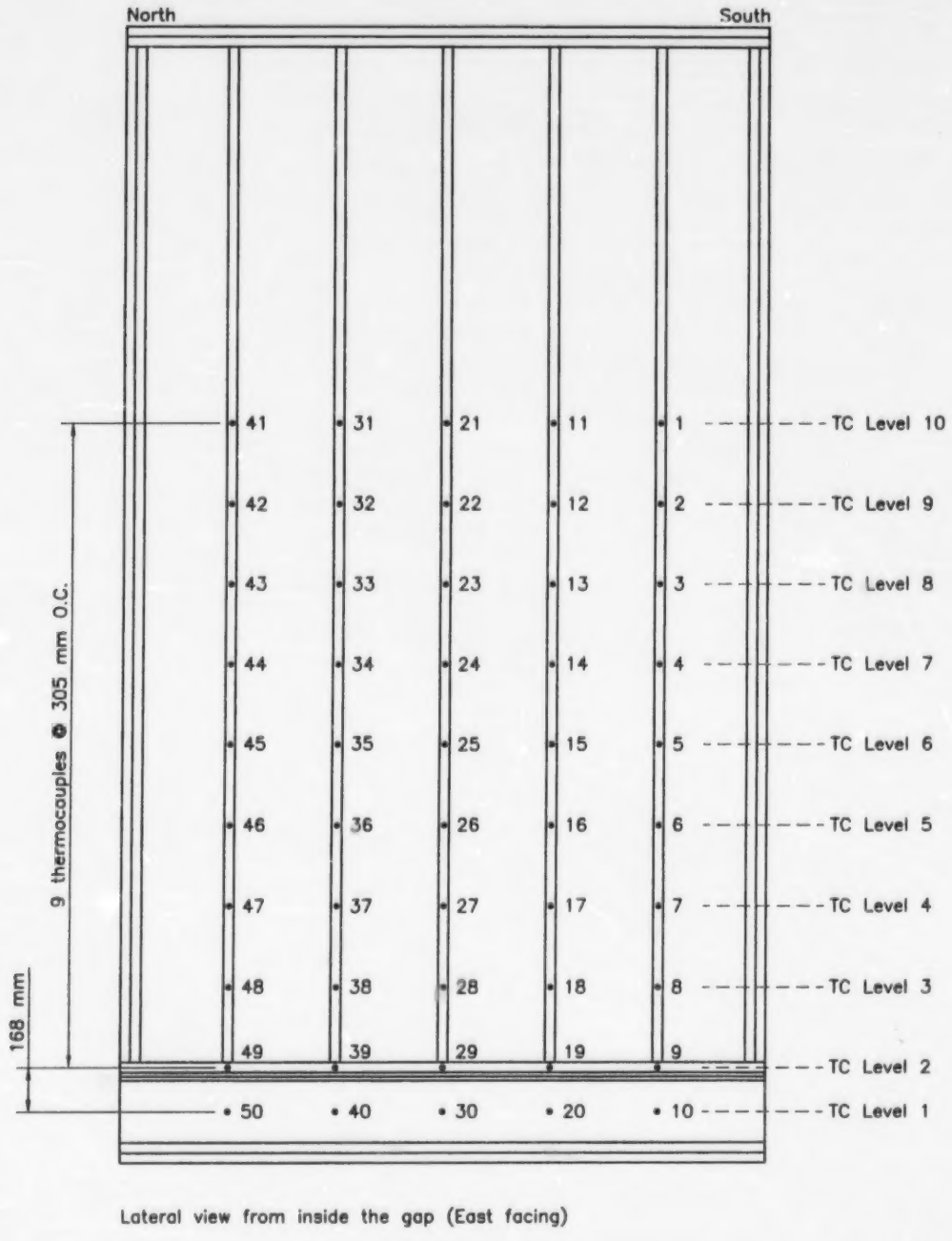


Figure 27. Assembly No. 3, Location of Thermocouples inside Wall No. 3 (Contract No. A1042)

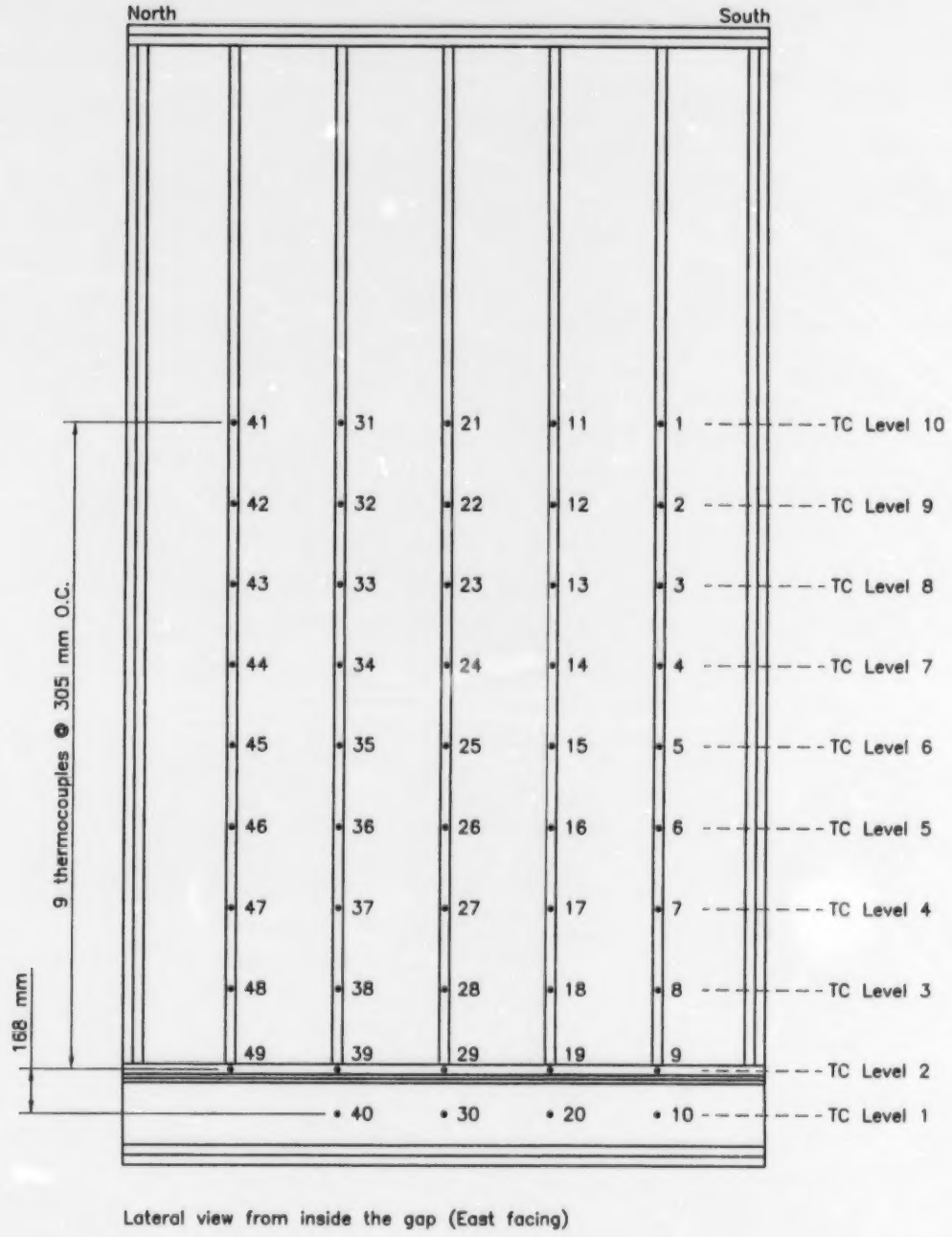
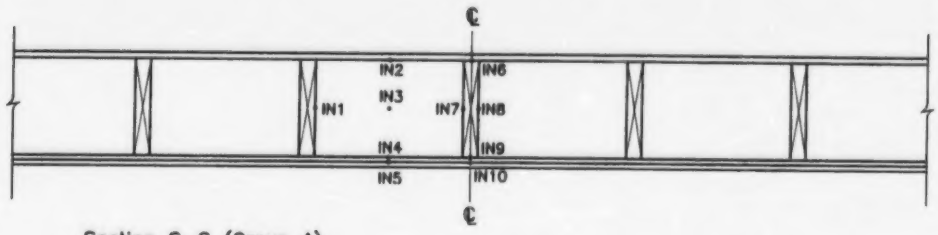
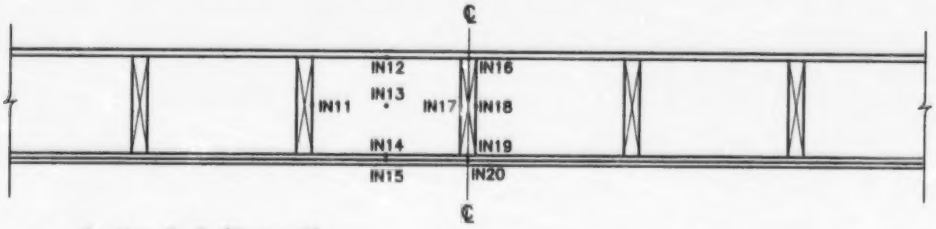


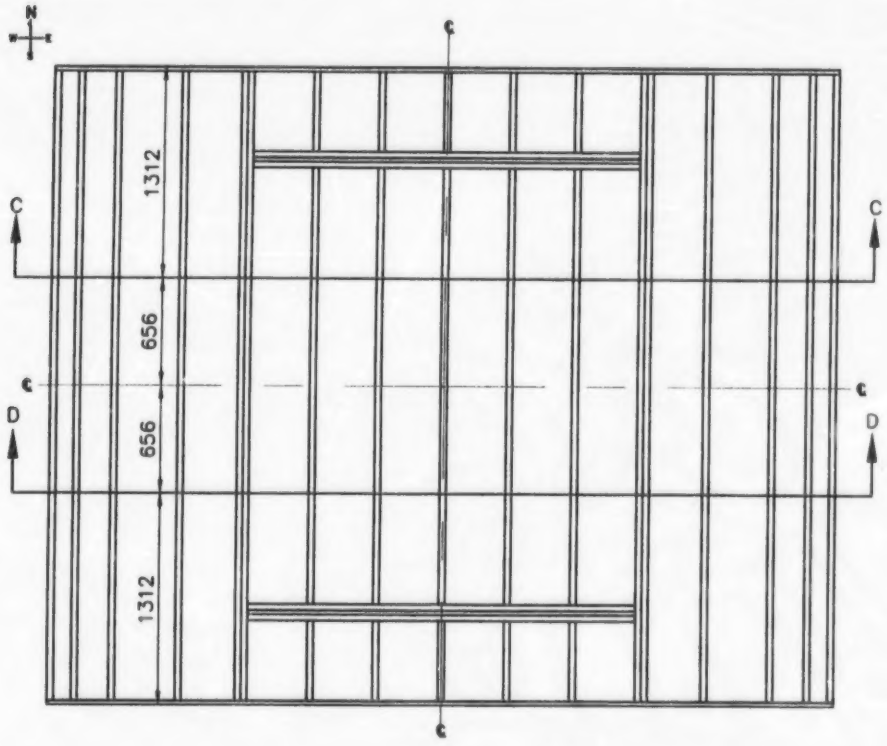
Figure 28. Assembly No. 3, Location of Thermocouples inside Wall No. 4 (Contract No. A1042)



Section C–C (Group A)

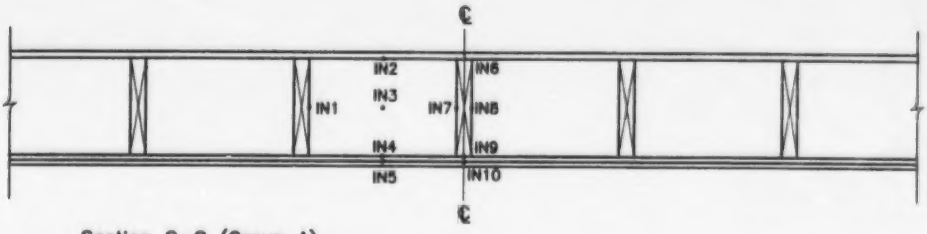


Section D–D (Group B)

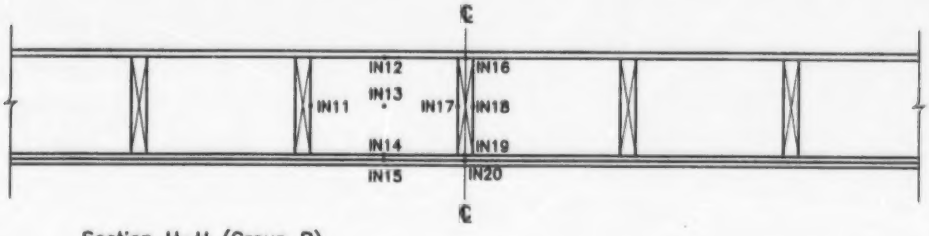


(Dimensions are in millimetres)

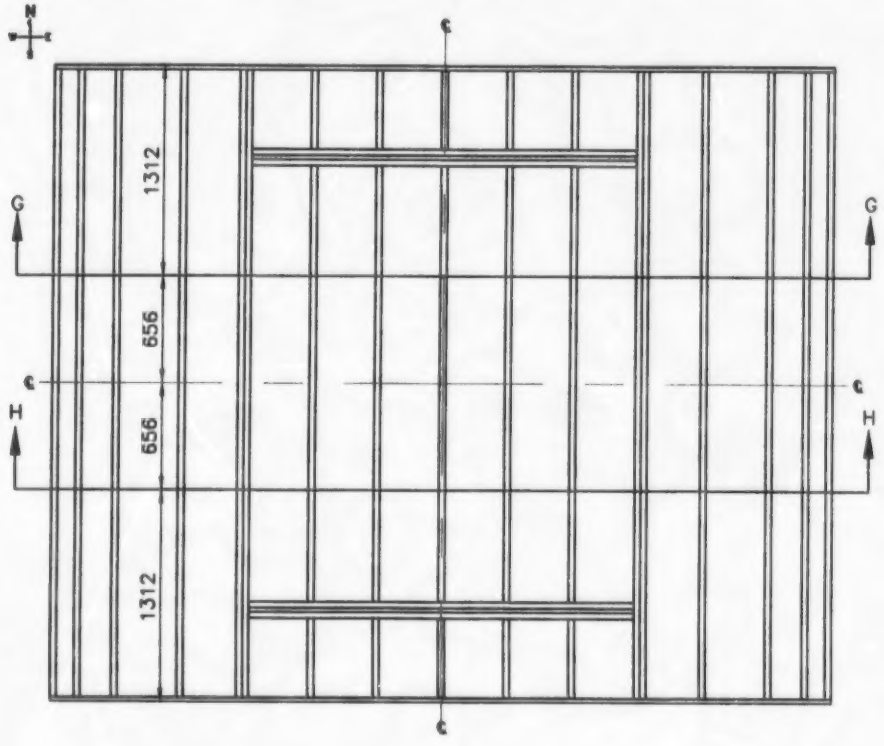
Figure 29. Assembly No. 1, Location of Floor Internal Thermocouples (Contract No. A1042)



Section G–G (Group A)

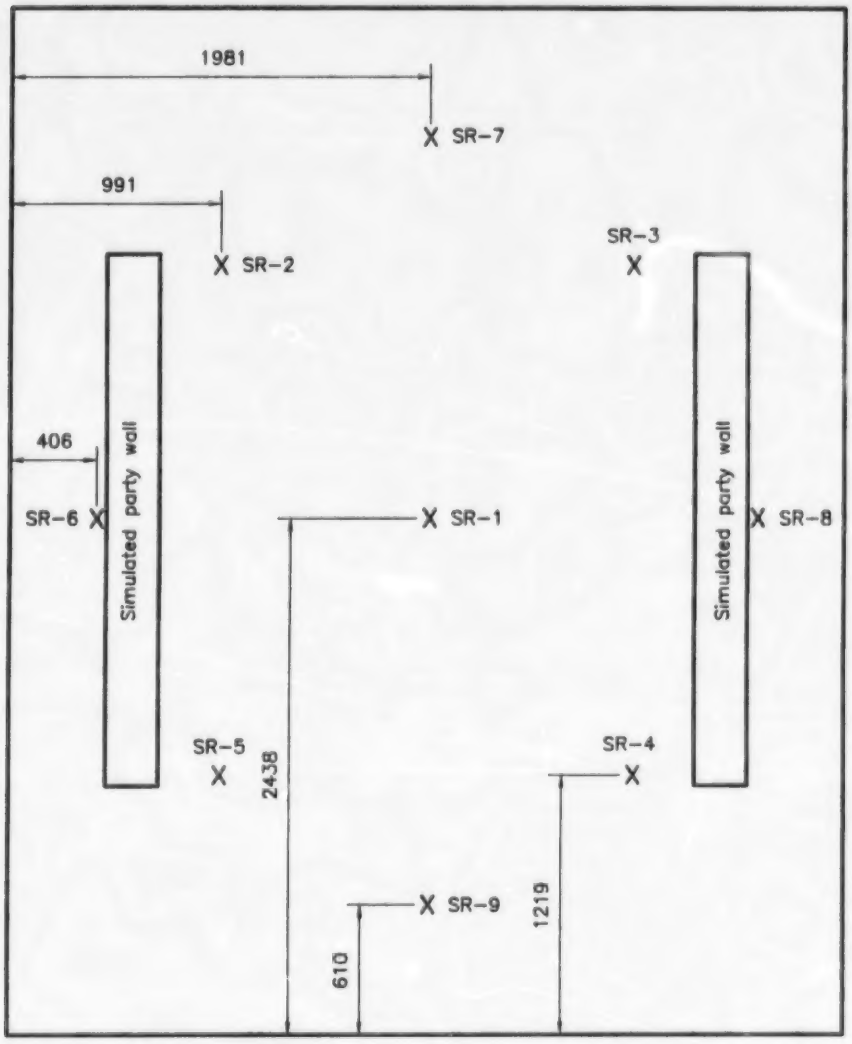


Section H–H (Group B)



(Dimensions are in millimetres)

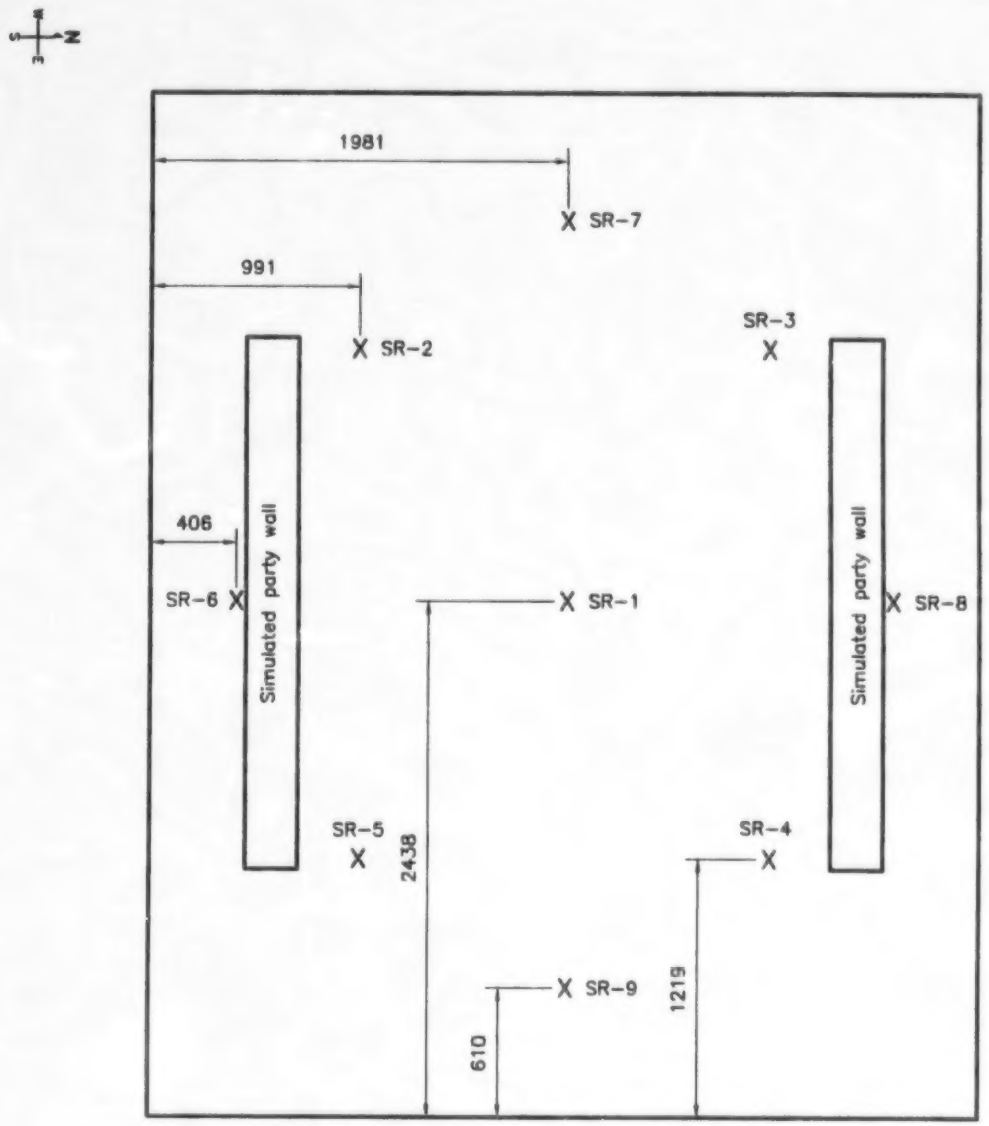
Figure 30. Assembly No. 2, Location of Floor Internal Thermocouples (Contract No. A1042)



X Thermocouple under ceramic pad

(Dimensions are in millimetres)

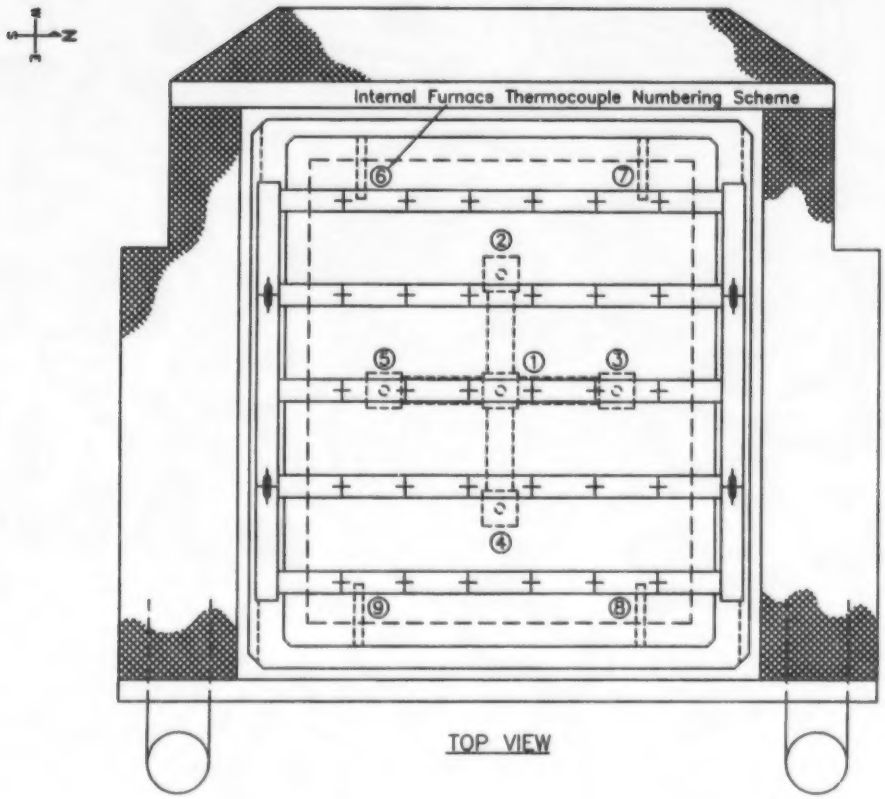
Figure 31. Assembly No. 1, Location of Floor Surface Unexposed Thermocouples (Contract No. A1042)



X Thermocouple under ceramic pad

(Dimensions are in millimetres)

Figure 32. Assembly No. 2, Location of Floor Surface Unexposed Thermocouples (Contract No. A1042)



* Note: Wall assemblies not shown

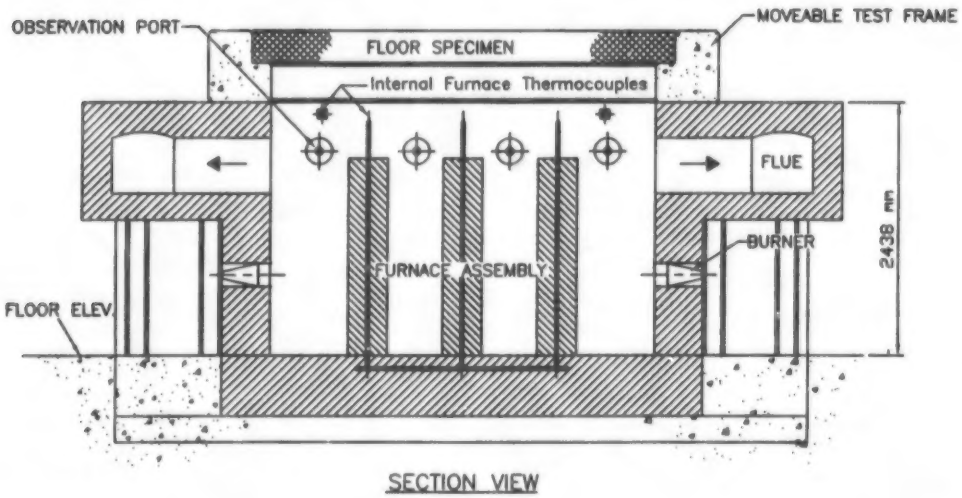
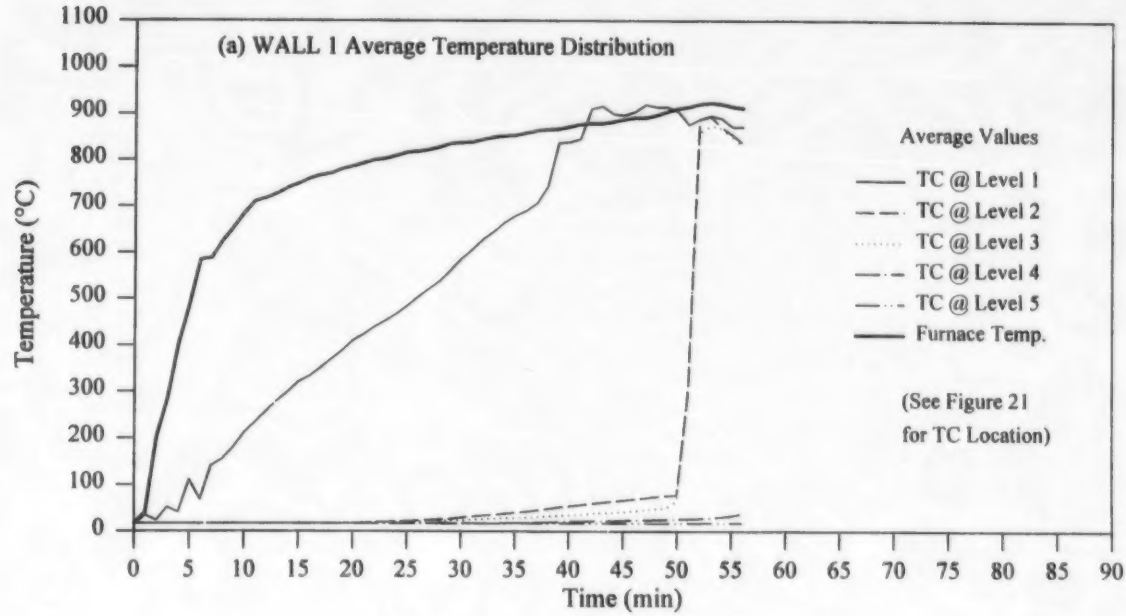


Figure 33. Full-Scale Floor Furnace
(Contract No. A1042)



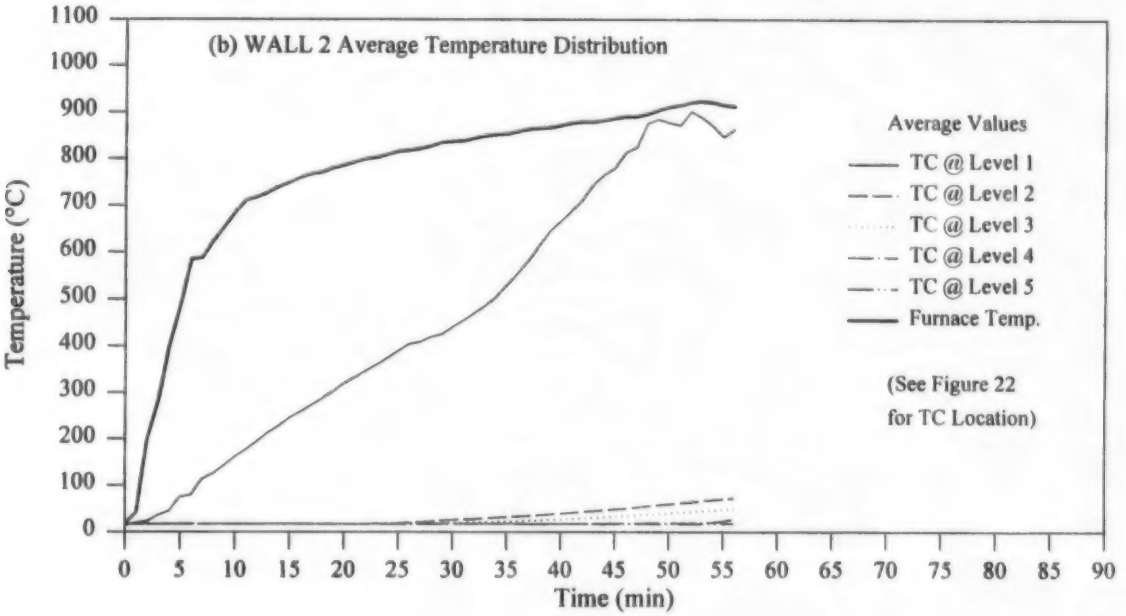
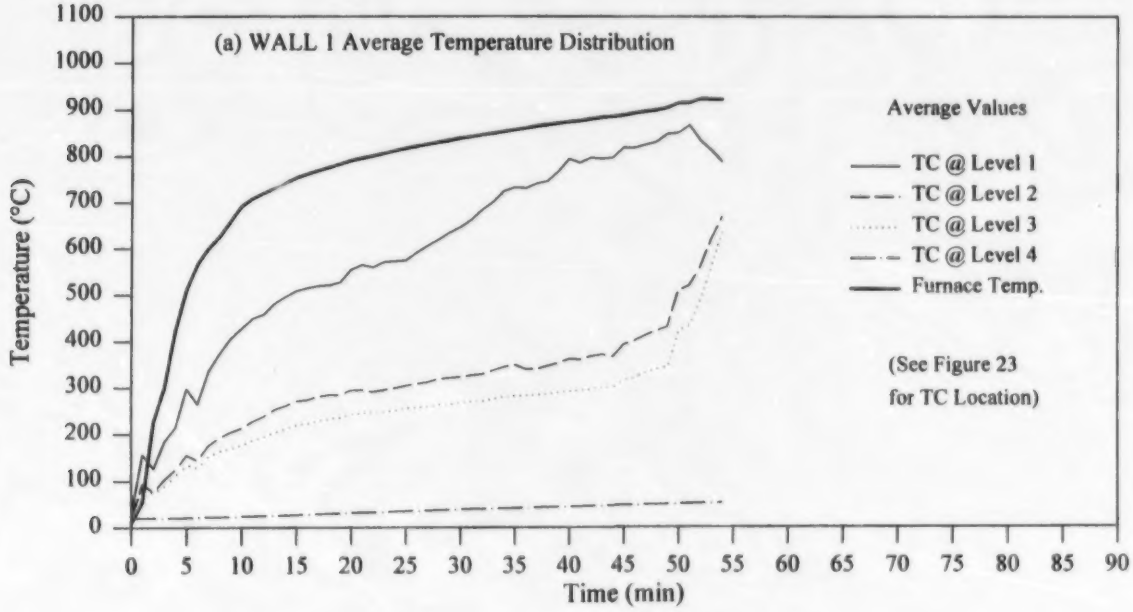


Figure 34. Assembly No. 1, Wall Nos. 1 & 2 Temperature Distributions
(Contract No. A1042)



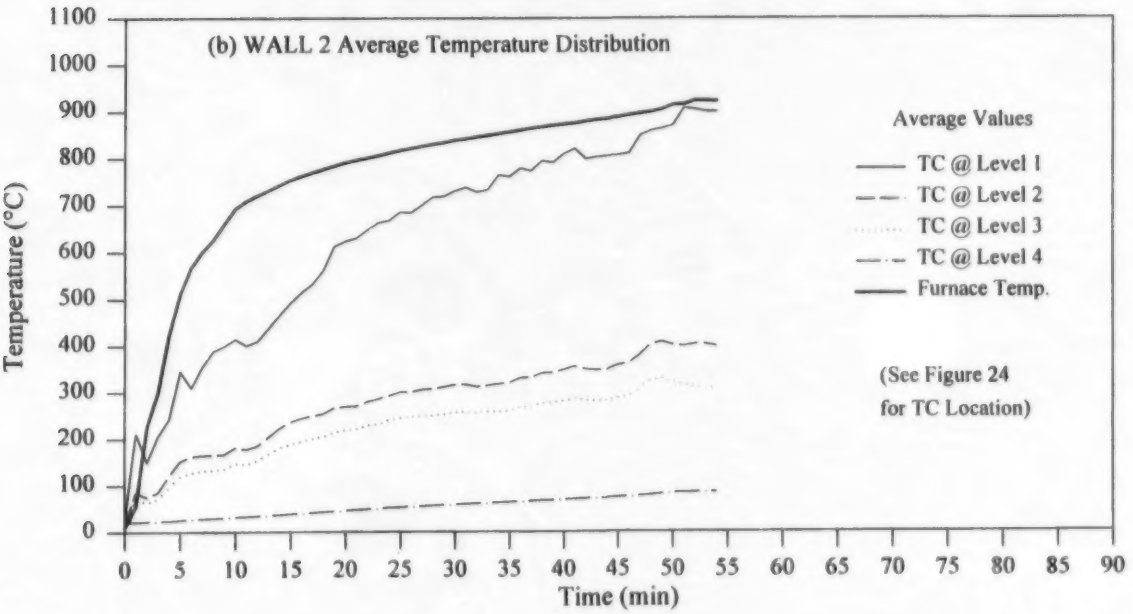
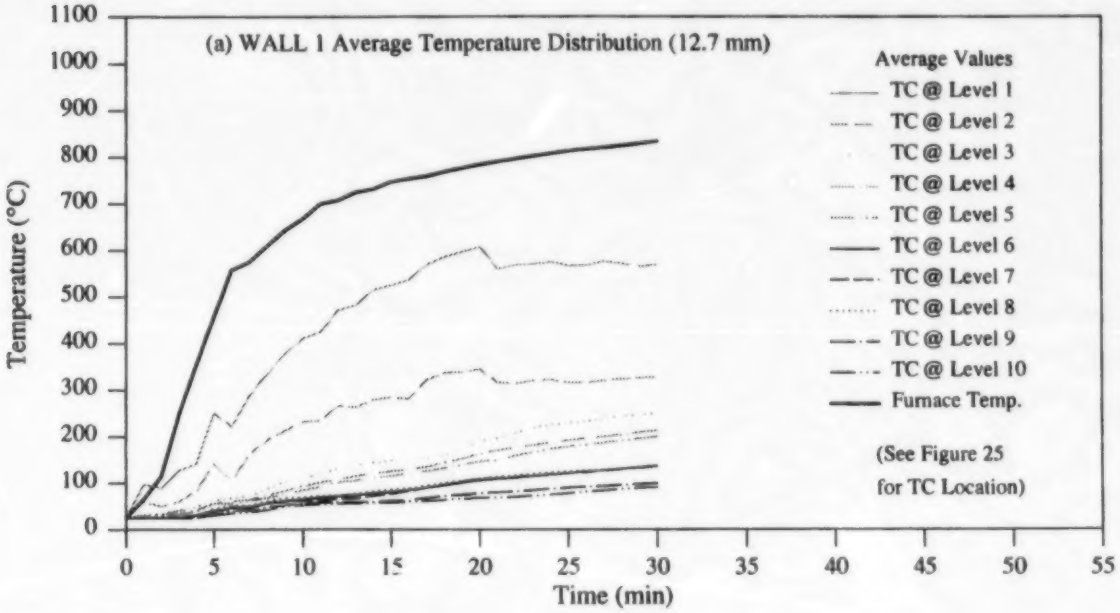


Figure 35. Assembly No. 2, Wall Nos. 1 & 2 Temperature Distributions
(Contract No. A1042)



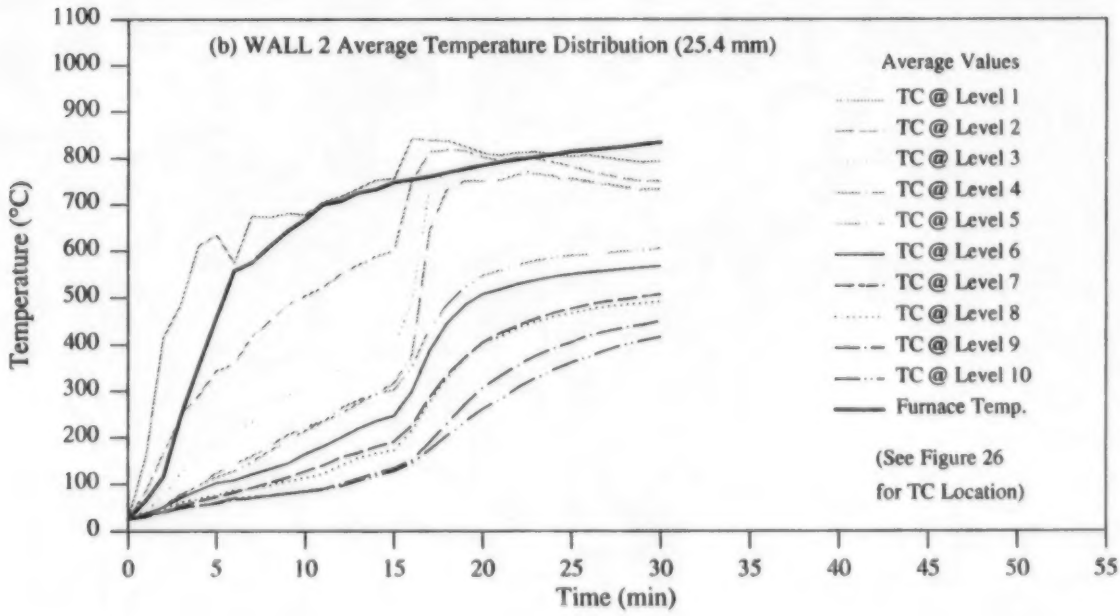
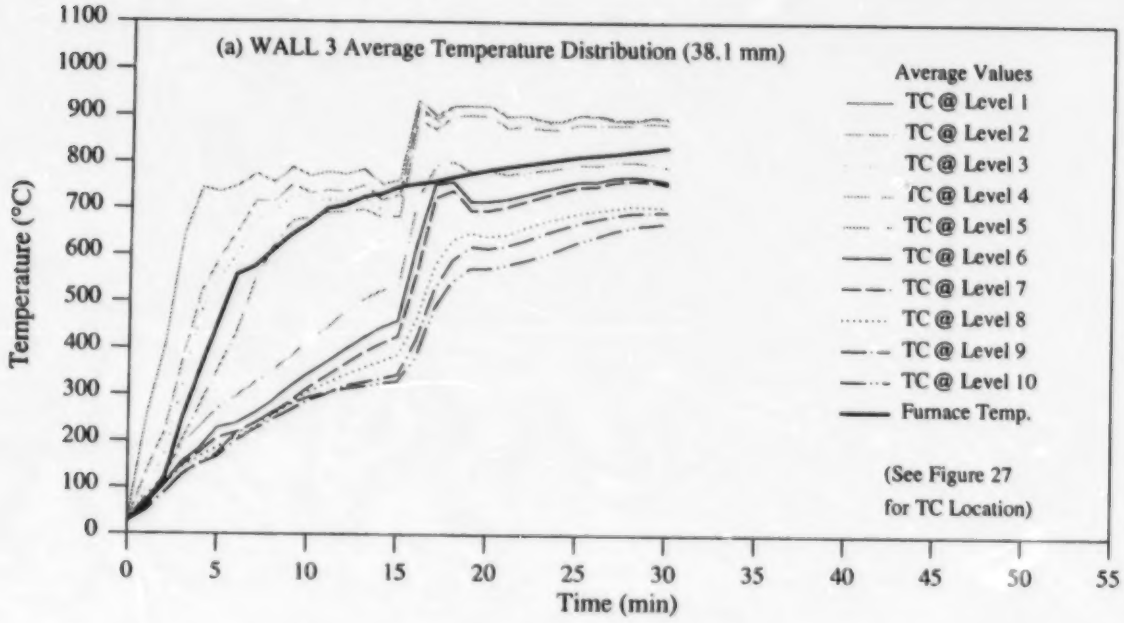


Figure 36. Assembly No. 3, Wall Nos. 1 & 2 Temperature Distributions
(Contract No. A1042)



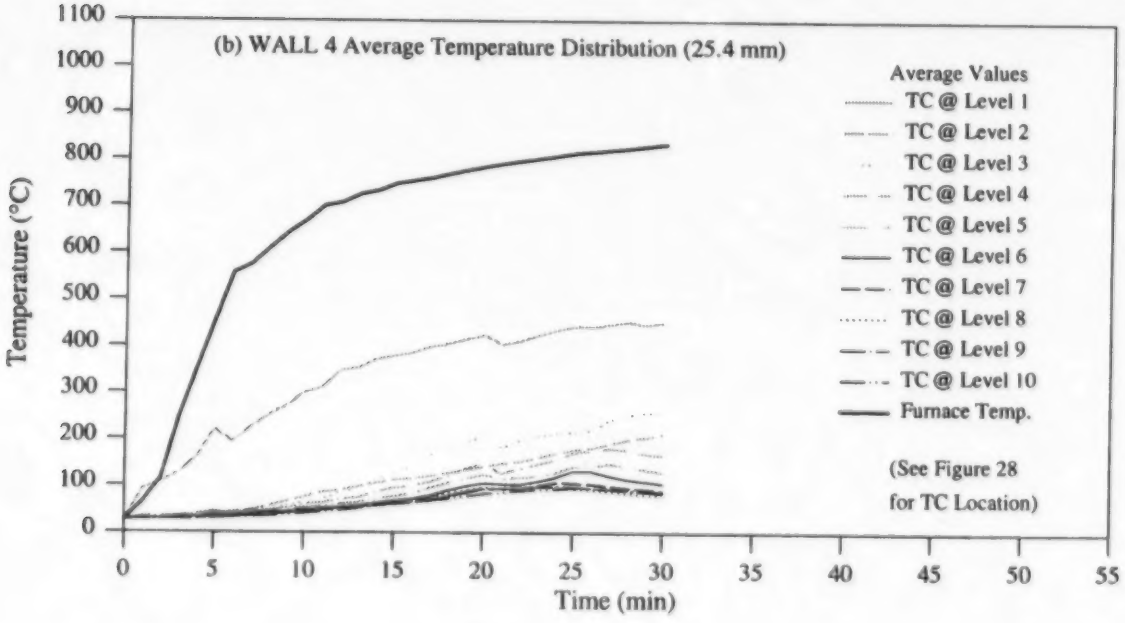


Figure 37. Assembly No. 3, Wall Nos. 3 & 4 Temperature Distributions (Contract No. A1042)